ORDER NO. AD9004085A8

Service Manual

COMPACT disc DIGITAL AUDIO

DIGITAL

Portable CD Player

SL-XP1

Color

(K) . . . . Black Type

Area

Country Code	Area	Color
(E)	Continental Europe.	(K)
(EB)	Great Britain.	
(EG)	F.R. Germany & Italy.	
(GC)	Asia, Latin America, Middle Near East and Africa.	

- Please file and use this manual together with the service manual for model No. SL-NP1 order No. AD9003040C1.
- This service manual indicates the main differences between; Original SL-NP1 (P) and SL-XP1 (E, EB, EG, GC).
- Refer to the Schematic Diagram and Circuit Board and Wiring Connection Diagram of this Service Manual.

CHANGES

■ SPECIFICATIONS

SL-NP1 (P)		SL-XP1 (E, EB, EG, GC)	
■ Audio		**■ Audio**	
Line out:	0.5 V (50 kΩ) φ3.5	Line out:	1.0 V (50 kΩ) φ3.5
Frequency response:	20~20,000 Hz (+0.5 dB, −2.0 dB)	Frequency response:	20~20,000 Hz (+0.5 dB, −1.5 dB)
Dynamic range:	more than 92 dB	Dynamic range:	more than 94 dB
S/N ratio:	more than 94 dB	S/N ratio:	more than 96 dB
■ General		**■ General**	
Power requirement:	AC; with an included AC adaptor Battery; with optional two "AA" size batteries (DC 1.5V x 2) Rechargeable Battery; with the optional rechargeable batteries (DC 1.2V x 2)	Power requirement:	AC; with an included AC adaptor Battery; with optional two "LR6" size batteries (DC 1.5V x 2) Rechargeable Battery; with the optional rechargeable batteries (DC 1.2V x 2)
Power consumption:		Power consumption:	
AC adaptor;	3 W	AC adaptor;	2 W
Battery;	0.7 W (DC 3 V)	Battery;	0.7 W (DC 3 V)
Weight:	320 g (11.3 oz) without batteries	Weight:	360 g with batteries

Technics

Matsushita Electric Industrial Co., Ltd.
Central P.O. Box 288, Osaka 530-91, Japan

■ REPLACEMENT PARTS LIST

Ref. No.	Change of Part No. SL-NP1 (P)	➡SL-XP1(E,EB,EG,GC)	Part Name & Description		Remarks
INTEGRATED CIRCUIT					
IC303	————	**NJM2100MAT1**	IC, LINE AMP		Addition
TRANSISTOR					
Q26	————	**2SD601QRSTW**	TRANSISTOR		Addition
DIODE (S)					
D14	————	**MA153TW**	DIODE		Addition
D15	————	**MA151WKTW**	DIODE		Addition
RESISTOR(S)					
R36	————	**ERJ6GEYJ221V**	1/10W	220	Addition
R115	ERJ6GEYJ564V	**ERJ6GEYJ684V**	1/10W	680K	Change
R329	ERJ6GEYJ104V	**ERJ6GEYJ154V**	1/10W	150K	Change
R330	ERJ6GEYJ104V	————	————		Deletion
R331	ERJ6GEYJ100V	**ERJ6GEYJ120V**	1/10W	12	Change
R332	ERJ6GEYJ100V	**ERJ6GEYJ120V**	1/10W	12	Change
CAPACITOR(S)					
C107	ECUV1H152KBN	**ECUV1H102KBN**	50V	1000P	Change
C309	ECUV1C333KBN	**ECUV1C223KBN**	16V	0.022U	Change
C310	ECUV1C333KBN	**ECUV1C223KBN**	16V	0.022U	Change
C311	ECUV1H332KBN	**ECUV1H222KBN**	50V	2200P	Change
C312	ECUV1H332KCB	**ECUV1H222KBN**	50V	2200P	Change
C313	————	**ECEA0JPK220I**	6.3V	22U	Addition
C321	ECEA0JK330I	**ECEA1APK330I**	10V	33U	Change
C322	ECEA0JK330I	**ECEA1APK330I**	10V	33U	Change
C329	ECEA0GK221I	**ECEA0GPK221I**	4V	220U	Change
C330	ECEA0GK221I	**ECEA0GPK221I**	4V	220U	Change
C337	ECUV1E393KBN	**ECUV1E123KBN**	25V	0.012U	Change
C338	ECUV1E393KBN	**ECUV1E123KBN**	25V	0.012U	Change
C346	ECEA1CK100I	**ECEA1CPK100I**	16V	10U	Change
C347	ECEA1CK100I	**ECEA1CPK100I**	16V	10U	Change
CABINET AND CHASSIS					
1	RKK0009–K	**RKK0009–1K**	BATTERY COVER		Change
7	RFKJLNP1P–K	**RFKJLXP1E–K**	BOTTOM CABINET ASS'Y		Change
11	RFKKLNP1P–K	**RFKKLXP1E–K**	DUST COVER ASS'Y		Change
PACKING MATERIAL					
P1	RPQ0054	**RPQ0072**	PAD (ACCESSORIES)		Change
P2	RPQ0059	**RPQ0069**	SPACER		Change
P3	RPQ0092	**RPQ0094**	ACCESSORIES BOX		Change
P7	RPK0143	**RPK0145**	PACKING CASE		Change
ACCESSORIES					
A2	RFEA301C–X	**SH–CDA6U–E**	AC ADAPTOR		(E,EG)Change
		SH–CDA6U–EK	AC ADAPTOR		(EB) Change
		SH–CDA6U–XB	AC ADAPTOR		(GC) Change
A4	RQA0003	**RQA0013**	WARRANTY CARD		(E,EB,EG)Change
A5	RQT0441–P	**RFKSLXP1E–K**	INSTRUCTION MANUAL ASS'Y		(E) Change
		RQT0444–B	INSTRUCTION MANUAL		(EB) Change
		RQT0445–D	INSTRUCTION MANUAL		(EG) Change
		RQT0661–G	INSTRUCTION MANUAL		(GC) Change
A6	SQX9129–1	**RQCB0169**	SERVICENTER LIST		Change
A7	————	**RJP120ZDS–K**	AC PLUG ADAPTOR		(GC) Addition

Note
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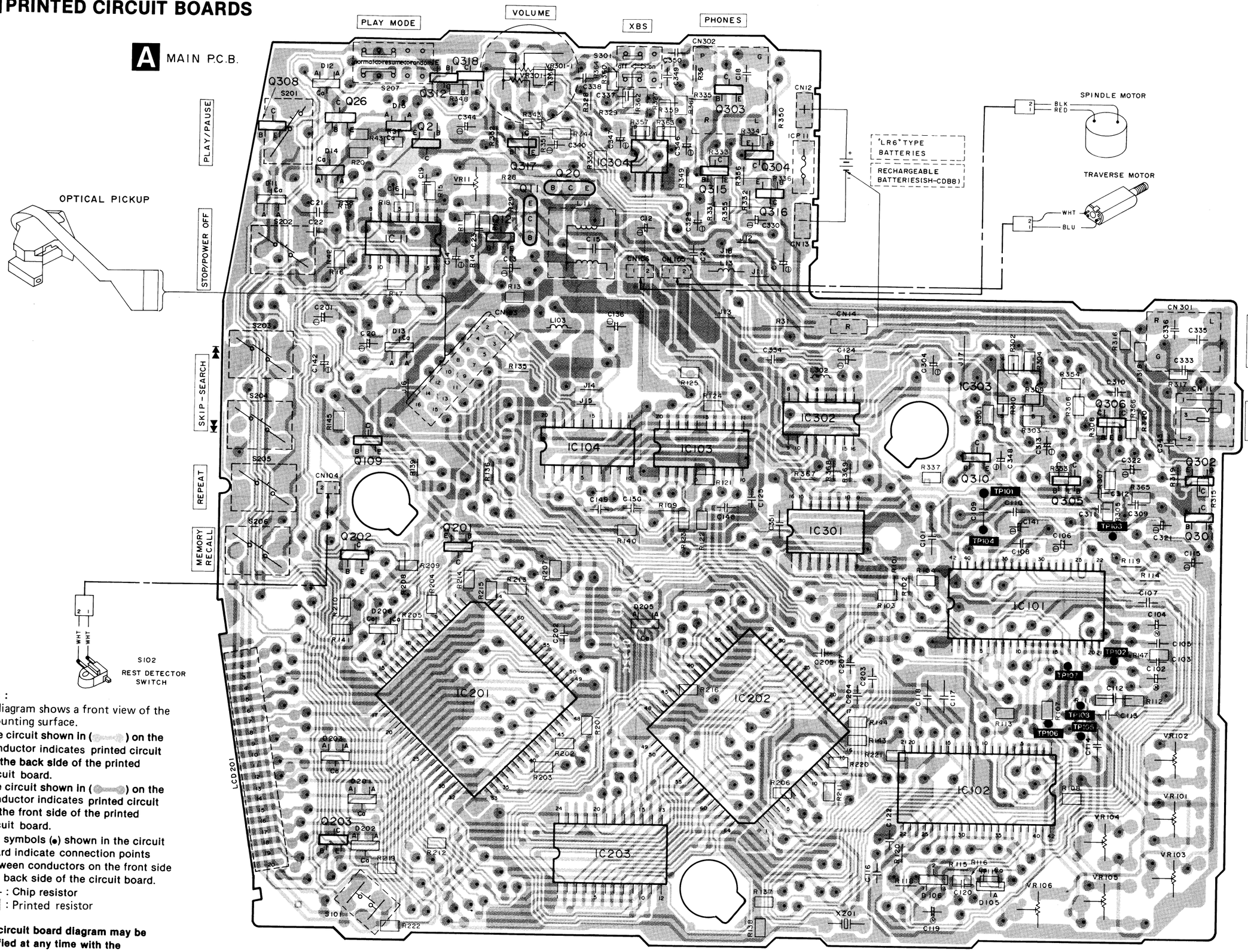
■ PRINTED CIRCUIT BOARDS

A MAIN P.C.B.



Notes :

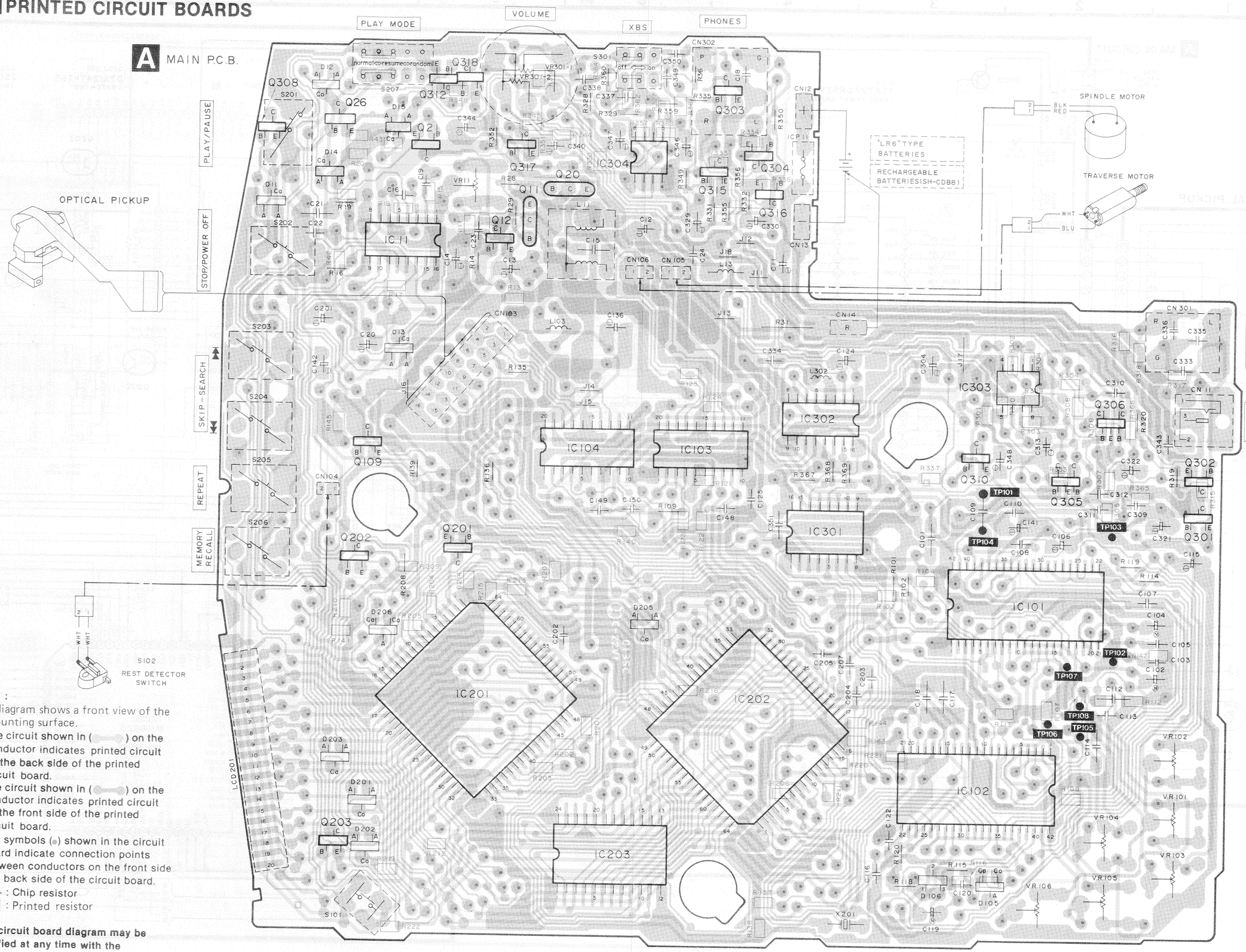
This diagram shows a front view of the IC mounting surface.

1. The circuit shown in ( ) on the conductor indicates printed circuit on the back side of the printed circuit board.
2. The circuit shown in ( ) on the conductor indicates printed circuit on the front side of the printed circuit board.
3. The symbols (●) shown in the circuit board indicate connection points between conductors on the front side and back side of the circuit board.
4. —— : Chip resistor
5. ▭ : Printed resistor

• This circuit board diagram may be modified at any time with the developement of new technology.

■ PRINTED CIRCUIT BOARDS

A MAIN P.C.B.



Notes :

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3. The symbols (●) shown in the circuit board indicate connection points between conductors on the front side and back side of the circuit board.
4. —— : Chip resistor
5. ▭ : Printed resistor

• This circuit board diagram may be modified at any time with the developement of new technology.

A MAIN CIRCUIT

OPTICAL PICKUP

IC101 AN8373SE2 SERVO AMP

IC102 AN8374SE2 SERVO PROCESSOR

IC103 AN8387SE2 MOTOR DRIVE (TRAVERSE/SPINDLE)

IC104 AN8387SE2 COIL DRIVE (FOCUS/TRACKING)

Q109 2SB709QRSTW LASER POWER DRIVE

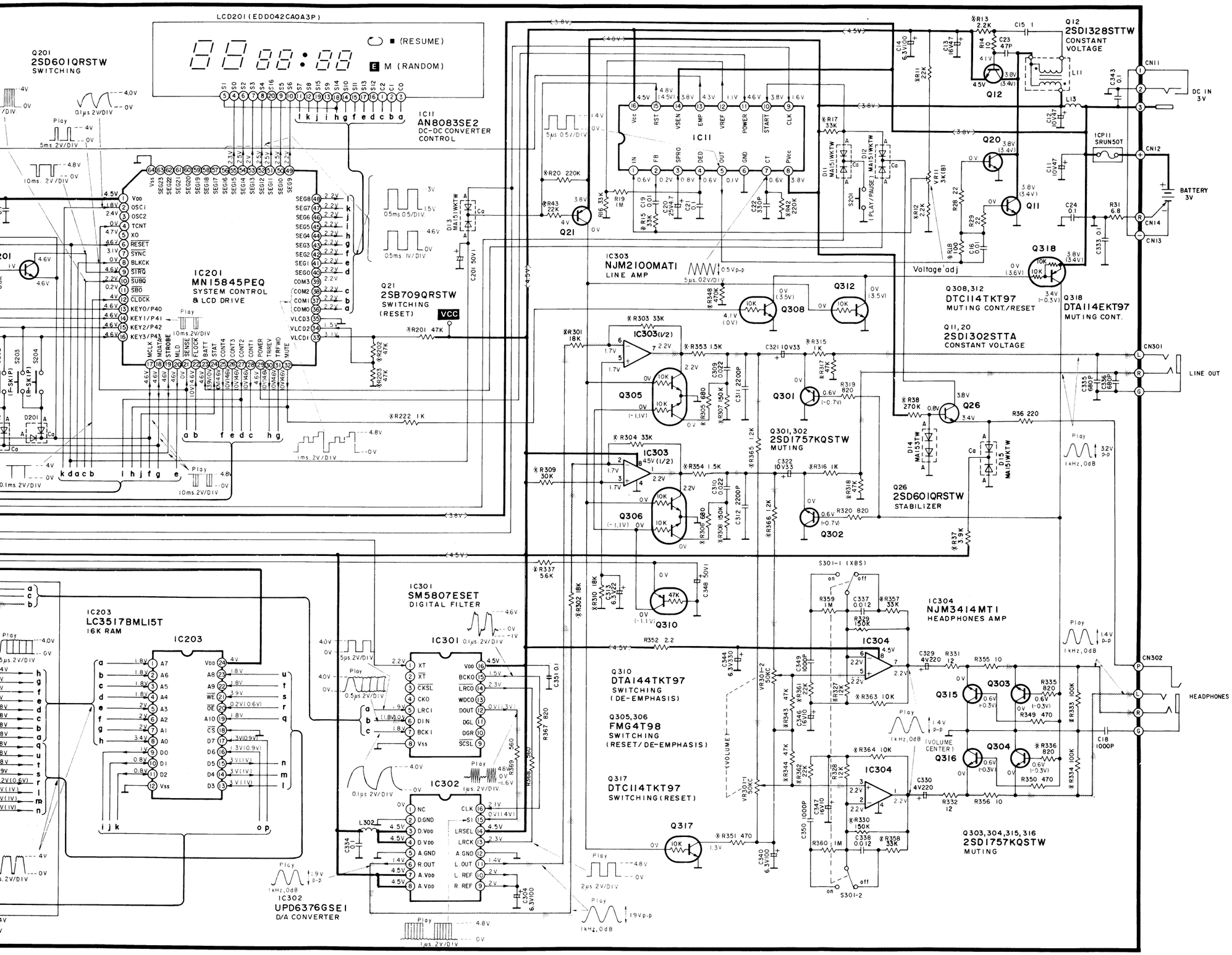
Q202,203 DTA124TKT97 SWITCHING

Q201 2SD601QRSTW SWITCHING

IC201 MN158451 SYSTEM CON & LCD DRIVE

IC202 MN6625 DIGITAL SIGNAL PROCESSOR

IC203 LC3517BML15T 16K RAM



■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

- **S101** : Laser ON/OFF switch in "**off**" position. (It turns "**on**" with disc holder closed.)
- **S102** : Rest switch in **"off"** position. (It turns "**on**" when optical pickup comes to inner-most periphery.)
- **S201** : Play/pause switch.
- **S202** : Stop/power off switch.
- **S203** : Skip/search (Forward) switch.
- **S204** : Skip/search (Backward) switch.
- **S205** : Repeat switch.
- **S206** : Memory/recall switch.
- **S207** : Play mode selector switch. (random ⟷ resume ⟷ normal)
- **S301** : XBS switch in "**off**" position.
- The voltage value and waveforms are the reference voltage of this measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of GND terminal (DC IN Jack). Accordingly, there may arise some error in the voltage values and waveforms depending upon the internal impedance of the tester or measuring unit.
  * The parenthesized is the voltage for test disc (1 kHz, L + R, 0 dB) in play mode, and the other, for no disc in stop mode.
  * AC adaptor (SH-CDA6U) is used for power supply.
- —≺≻— : Positive voltage lines.
  ····· : Aduio signal lines.
- Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- ⁘ marks indicate printed resistor

*** Caution !**

IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.
* Cover the parts boxed made of plastics with aluminum foil.
* Ground the soldering iron.
* Put a conductive mat on the work table.
* Do not touch the legs of IC or LSI with fingers directly.

■ PRECAUTION OF LASER DIODE

CAUTION:
This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pick up lens.
Wave length: 780nM
Maximum output radiation power from pick up: 100μW/VDE

Laser radiation from the pick up lens is safety level, but be sure the followings:

1. Do not disassemble the optical pick up unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pick up lens for a long time.

ACHTUNG:
Dieses produkt enthält eine laserdiode. Im eingeschalteten zustand wird unsichtbare laserstrahlung von der lasereinheit abgestrahlt.
Wellenlänge : 780nM
Maximale strahlungsleistung der lasereinheit: 100μW/VDE

Die strahlung an der lasereinheit ist ungefährlich, wenn folgende punkte beachtet werden:

1. Die lasereinheit nicht zerlegen, da die strahlung an der freigelegten laserdiode gefährliich ist.
2. Den werksseitig justierten einstellregler der lasereinreit nicht verstellen.
3. Nicht mit optischen instrumenten in die fokussierlinse blicken.
4. Nicht über längere zeit in die fokussierlinse blicken.

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ORDER NO. AD9003040C1
A6

Service Manual

COMPACT disc DIGITAL AUDIO

DIGITAL

Portable CD Player

SL-NP1

Color

(K) . . . . Black Type

Area

Country Code	Area	Color
(P)	U.S.A.	(K)
(PC)	Canada.	

■ SPECIFICATIONS

■ Audio

No. of channels: 2 channels (stereo)
Line out: 0.5 V (50 kΩ) φ3.5
Frequency response: 20~20,000 Hz (+0.5 dB, −2.0 dB)
Dynamic range: more than 92 dB
S/N ratio: more than 94 dB
Digital filter: Quadruple over sampling
Phones output: max. 15 mW/16Ω φ3.5 (adjustable)
D/A Converter: 2 DAC 16 bit

■ Signal Format

Correction system: Technics New Super Decoding Algorithm

■ Pickup

Type: Fine-focus, one beam
Light source: Semiconductor laser
Wavelength: 780 nm
Lens: Glass pressed lens

■ General

Power requirement: AC; with an included AC adaptor
Battery; with optional two "AA" size batteries (DC 1.5V x 2)
Rechargeable Battery; with the optional rechargeable batteries (DC 1.2V x 2)
DC IN: 3V ⊕—●—⊖ (mini jack)
Power consumption:
AC adaptor; 3 W
Battery; 0.7 W (DC 3 V)
Dimensions (W×H×D): 128×35×145 mm (5″×1⅜″×5¹¹⁄₁₆″)
Weight: 320 g (11.3 oz) without batteries

Specifications are subject to change without notice.
Weight and dimensions are approximate.

Panasonic®

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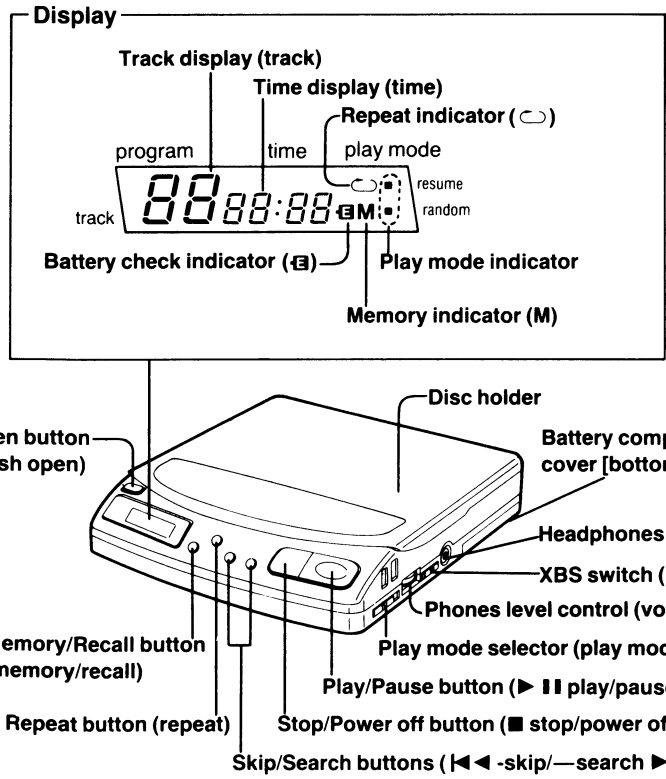
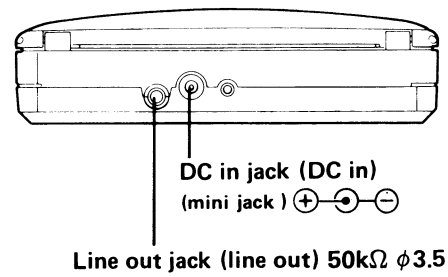
■ PRECAUTION OF LASER DIODE

CAUTION: This unit utilizes a class 1 laser. Invisible laser radiation is emitted from the optical pick up lens when the unit is turned on:

1. Do not look directly into the pick up lens.
2. Do not use optical instruments to look at the pick up lens.
3. Do not adjust the preset variable resistor on the optical pick up.
4. Do not disassemble the optical pick up unit.
5. If the optical pick up is replaced, use the manufactures specified replacement pick up only.
6. Use of control or adjustments or performance of procedures other than those specified herin may result in hazardous radiation exposure.

■ CONTROLS AND FUNCTIONS





BATTERY SERVICE LIFE

Approx 2.5 hours (EIAJ) with rechargeable batteries.
Approx 4.0 hours (EIAJ) with panasonic AM-3 alkaline (AA-size) batteries.
The above battery service life is measured according to the conditions set forth by EIAJ (Electronic industries Association of Japan). As the battery service life varies with the method of operation and envirommental conditions, use these values as reference.

■ ACCESSORIES

- AC adaptor . . . . . 1 [RFEA301C–X]
- Strap . . . . . 1 [RFC0005–1]
- Stereo connection cable . . . . 1 [SJPD5-2K]

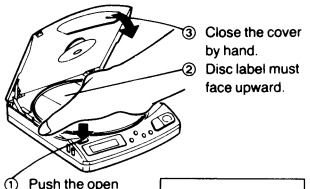
■ OPERATION

The following explanation is for a disc containing 7 tracks having a total playing time of 49 minutes and 58 seconds.

1 Normal play
(To play a disc from the first track to the end of the disc)

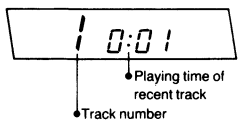
First, set the play mode selector to "normal" position. (The play mode indicator does not display this position.)

1. Insert a disc.

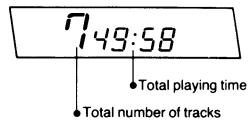


8 cm (3") size discs can be used without adaptor.

2. Turn down the level control of this unit or the connected audio system.
3. Press the play/pause button.
   - The unit will be turned on and the disc will be played from the first track.



4. Adjust the volume.
   - To listen through stereo earphones or headphones, adjust the phones level by the phones level control of this unit.
   XBS switch (phones only)
   Set the XBS switch to "on" to boost the low frequency range.
   - To listen through an audio system, adjust the output level on the amplifier or receiver.
5. To stop disc play, press the stop/power off button.
   - The disc will stop rotating, and the total number of tracks and total playing time will be displayed.

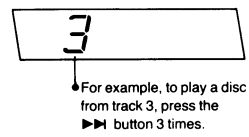


   - When all tracks have been played, the disc will automatically stop.
6. Press the stop/power off button again to turn the unit off.
   - The unit will be turned off automatically after about 5 minutes in the stop mode.

Note:
Always press the stop/power off button before opening the disc compartment to avoid possible damage to disc and/or the disc play mechanism.

2 Skip play (To start disc play from a specific track)

1. From the stop mode, press the ▶▶| button (skip/search) to specify the desired track.
   - Each time you press this button, the pickup will advance by one track. If you pass the desired track, use the |◀◀ button to return to the desired track.



   - To cancel, press the stop/power off button.
2. Press the play/pause button.
   - Disc play will start from the specified track, and continue to the last track.

■ Skip play during disc play

By pressing the skip/search button (|◀◀ or ▶▶|) during disc play or pause mode, you can easily move the pickup to the beginning of the track being played or a track before or after it.

•Forward skip
Each time the ▶▶| button is pressed, the pickup skips to the beginning of the next track.

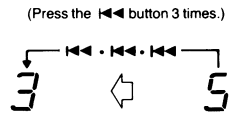
For example, to skip from track 3 to track 5...

(Press the ▶▶| button twice.)

•Backward skip
If the |◀◀ button is pressed once, the disc will be played from the beginning of the recent track. If pressed again quickly, the pickup skips to the beginning of the previous track.

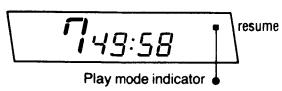
For example, to skip from the track 5 to the track 3...

(Press the |◀◀ button 3 times.)

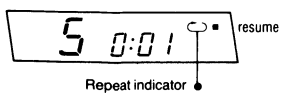


3 Resume play
(To continue disc play from the track last played before power off)

1. From the stop mode, set the play mode selector to "resume".



2. Press the play/pause button.
   You are now in the "resume" play mode.
3. If disc play is stopped or the power is set to off when disc play is resumed, play will resume from the beginning of the track last played.
   - Resume play can be performed without setting the unit off. In this case, the automatic repeat does not funciton.
4. Press the play/pause button.
   - The disc will be played from the beginning of track 5, if the last played track was 5.



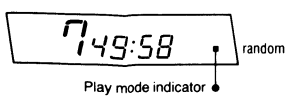
•Automatic Repeat Function
When the unit is switched on in the resume mode, the unit will be automatically in the repeat mode.
- To cancel the repeat mode, press the repeat button or press the stop/power off button.

Notes:
- Resume play may start from the next track when disc play has been stopped very near the end of the track.
- Changing a disc confuses the resume play operation.
- Resume play cannot be performed when using the disc containing only one program.
- Program memory cannot be resumed. If the unit has been turned off during program play, only the track being played will resume.

4 Random play (To play tracks in random order)

The unit's microcomputer selects the sequence of play in random order until all of the tracks on the disc have been played.

1. From the stop mode, set the play mode selector to "random".



2. Press the play/pause button.
   - The tracks will be played in a random order.

- The first track number can be selected by pressing the ▶▶| button in the stop mode. In this case, the track number is also changed in random order.
- When all tracks have been played at random, the disc will automatically stop.

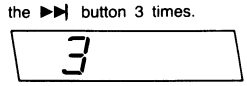
Note:
Program play cannot be performed in the random mode.

5 Program play (to play tracks in a certain order)

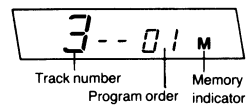
A maximum of 18 selections can be programmed.

For example, to play track 3, track 5, track 1 in that order...

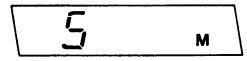
1. From the stop mode, set the play mode selector to the "normal" position. (The play mode indicator does not display this position.)
2. Press the ▶▶| button 3 times.



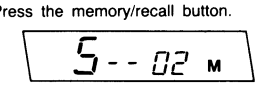
3. Press the memory/recall button.



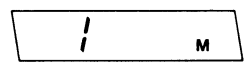
   - If the memory/recall button is pressed repeatedly, the same track is programmed, as many times the button is pressed.
4. Repeat procedure 2 and 3 according to your program selections.
   ① Press the ▶▶| button twice.



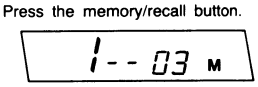
   ② Press the memory/recall button.



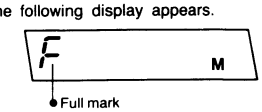
   ③ Press the |◀◀ button 4 times.



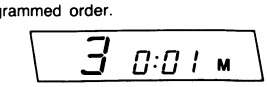
④ Press the memory/recall button.



- To clear the program, press the stop/power off button before program play.
- If the program exceeds 18 selections, the following display appears.



5. Press the play/pause button.
   - The track will be played in the programmed order.



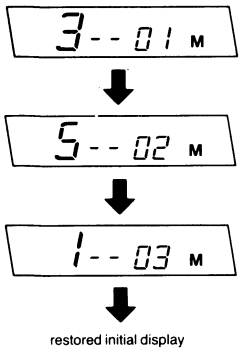
   - When all programmed tracks have been played, the disc will automatically stop.

Note:
The program will be cancelled if the stop/power off button is pressed during program play.

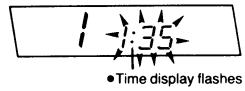
•Forward skip (▶▶|)
During program play, the pickup skips to the beginning of the next programmed track each time the button is pressed.

•Backward skip (|◀◀)
During program play, the pickup skips to the beginning of the current track. If pressed again quickly, the pickup skips to the beginning of the previous programmed track.

•Recall function
By pressing the memory/recall button once during program play, the program can be easily recalled.



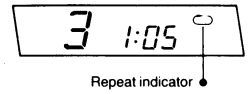
■ Pause function
If the play/pause button is pressed while a disc is being played, disc play will stop briefly.



•When this button is pressed once again, disc play will continue from where it stopped.

■ Automatic power off function
The unit will be switched off automatically after about 5 minutes in the stop or pause mode to conserve battery life.

■ Repeat play
If the repeat button is pressed, the repeat indicator will appear, and disc will be played repeatedly. Pressing the repeat button again or pressing the stop/power off button will cancel the repeat function.



•During program play, only the programmed tracks will be played repeatedly in the programmed sequence.

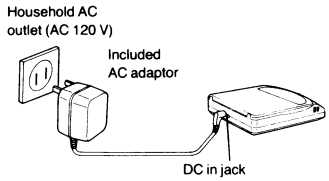
■ Search function
If the ▶▶| button (or |◀◀ button) is pressed and held during disc play, sound from the disc can be heard as the pickup moves at high speed in the forward (reverse) direction (the output level at this time is about ¼ of the level during normal play). Release the button when the pickup reaches the desired portion of the disc.

Notes:
- •During program play or random play, you can only search within the track being played.
- •If you release the button immediately, the unit will go into the skip play.

■ POWER SOURCE

This unit may be used with the included AC adaptor, the optional rechargeable batteries (SH-CDB8), optional "AA" size alkaline batteries or the optional car adaptor (SH-CDC4).

■ AC adaptor power operation
Use only the included AC adaptor with this unit.
1. Insert the plug, at the end of the AC adaptor cord, into the DC in jack.
2. Plug the AC adaptor unit into your household AC power outlet.

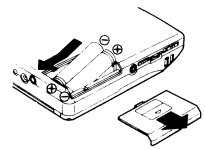


CAUTION:
Do not use the included AC adaptor for other products.

Notes:
- •To operate from battery power, unplug the AC adaptor unit from the household AC power outlet and the DC in jack on the unit.
- •Make sure to remove the rechargeable batteries during AC power operation (except when recharging).

■ Rechargeable batteries (optional) operation
For its initial use after purchasing or after a long time interval (more than three months), make sure to recharge the rechargeable batteries. Normally 3 hours recharging will give approximately 2.5 hours play (at 25°C).

1. Open the battery compartment cover and insert the rechargeable batteries into the battery compartment, making sure that the proper polarities are maintained.

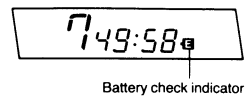


2. Close the cover and connect the AC adaptor.
3. Disconnect the AC adaptor in about 3 hours.

•The unit can be turned on with the AC adaptor while the battery is being recharged. In this case, the recharging time will be longer than the specified time.

Note:
The only Panasonic optional SH-CDB8 rechargeable battery can be recharged with this unit.

•Rechargeable battery life
The optional SH-CDB8 rechargeable battery can be recharged about 300 times. Over 300 times, its operation time will become shortened. That's time for replacing the rechargeable batteries with new ones.
- •Battery condition can be checked by the battery check indicator on the display. When the batteries are weak, the battery check indicator begins to flash on and off, and then the unit will automatically shut off.



■ Optional "AA" battery operation
Two "AA" size (Panasonic AM-3 or equivalent) alkaline batteries can be inserted into the battery compartment in the same way as the rechargeable batteries.
- •Battery condition can be also checked by the battery check indicator. The indicator begins to flash on and off at a half consumption of the battery life.

Use of alkaline batteries will give approximately 4 hours play (at 25°C).

■ Car battery operation
Follow the operating instructions of the optional car adaptor.
The rechargeable battery can be recharged with the car adaptor.

CAUTION:
Use only Panasonic car adaptor SH-CDC4.

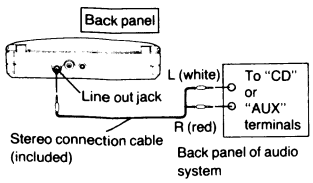
Note:
Make sure to remove the rechargeable batteries during car battery operation (except when recharging).

Notes concerning batteries
- •Be sure the batteries are inserted so that their positive (+) and negative (−) polarities match the polarities indicated in their compartment.
  Batteries installed incorrectly may leak and damage the CD player.
- •If the battery leaks, remove all batteries and dispose of them. Thoroughly clean the battery compartment before inserting new batteries.
- •Keep batteries out of reach of children.
- •During recharging, the AC adaptor and rechargeable batteries may get warm. This is normal.
- •On its initial use after purchase or its use after a long time interval, 3 hours recharging may not provide normal operation time. Repeated recharges should recover the normal operation time.
- •Do not recharge longer than the specified time, otherwise the rechargeable battery life may be shortened.
- •Avoid recharging or placing the rechargeable battery near sources of heat or humidity. Recharging should be performed at 0°C~40°C (32°F~104°F).
- •Do not attempt to recharge alkaline or carbon batteries.
- •If a battery leak should occur and the electrolyte comes into contact with skin or clothes, flush with water immediately.
- •If the CD player is not to be used for a long period of time, remove the batteries and store them in a cool, dark place.
- •Never subject batteries to excessive heat or flame; do not attempt to disassemble them; and be sure they are not short-circuited.
- •Do not mix old and new batteries, or batteries of different types (carbon and alkaline, etc.).
- •Always remove old, weak or worn-out batteries promptly and dispose of them properly.

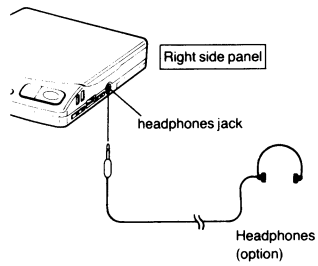
■ CONNECTIONS

■ Listening through an audio system
Use the stereo connection cable (included) to connect this unit to a receiver or a stereo cassette recorder.

- •Set the power of the receiver or stereo radio cassette recorder to off before connecting this unit.
- •Do not connect this unit to the PHONO terminals of the receiver or stereo radio cassette recorder.



■ Listening through headphones
Connect the plug of the headphones (option) to the headphones jack.



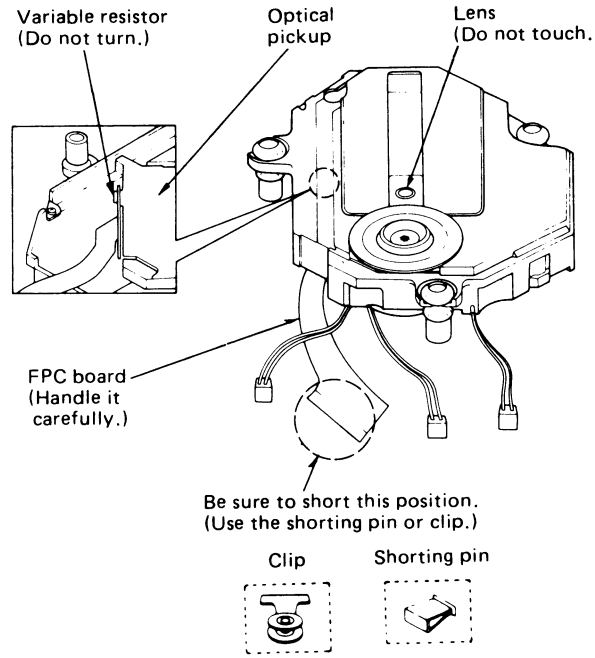
Note:
Avoid listening for prolonged periods of time to prevent hearing loss.

■ HADLING PRECAUTIONS FOR TRAVERSE DECK

The laser diode in the traverse deck (optical pickup) may break down due to potential difference caused by static electricity of clothes or human body.
So, be careful of electrostatic breakdown during repair of the traverse deck (optical pickup).

• Handling of traverse deck (optical pickup)

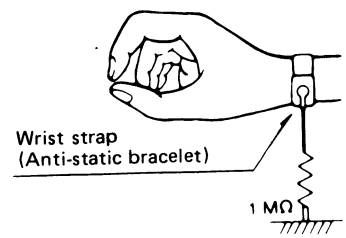
1. Do not subject the traverse deck (optical pickup) to static electricity as it is extremely sensitive to electrical shock.
2. To prevent the breakdown of the laser diode, an anti-static shorting pin is inserted into the flexible board (FPC board).
   When removing or connecting the short pin, finish the job in as short time as possible.
3. Take care not to apply excessive stress to the flexible board (FPC board).
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

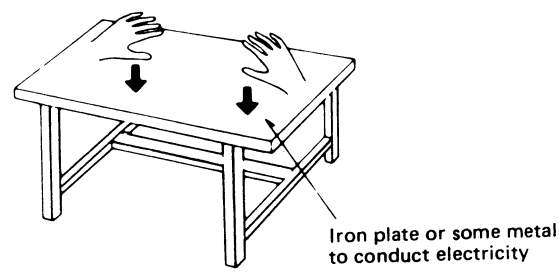


• Grounding for electrostatic breakdown prevention

1. Human body grounding.
   Use the anti-static wrist strap to discharge the static electricity from your body.
2. Work table grounding
   Put a conductive material (sheet) or steel sheet on the area where the traverse deck (optical pickup) is placed, and ground the sheet.

Caution:
The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the traverse deck (optical pickup).



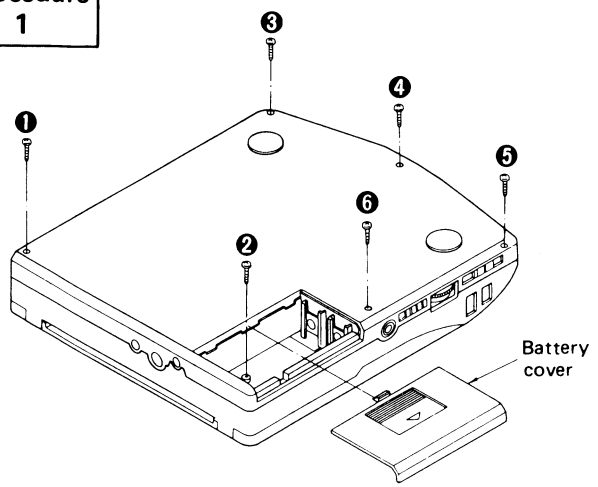


■ DISASSEMBLY INSTRUCTIONS

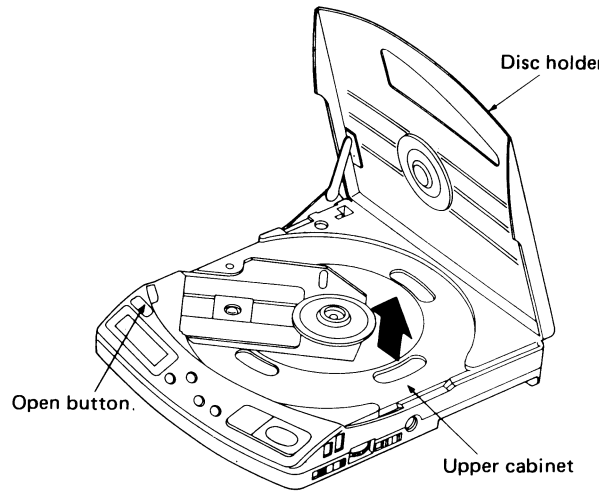
Warning: This product uses a laser diode. Refer to caution statements on page 2.

*** This CD player is equipped with FPC boards, so handle them with care during disassembly and reassembly.**

Ref. No. 1	Removal of the upper cabinet
Procedure 1	

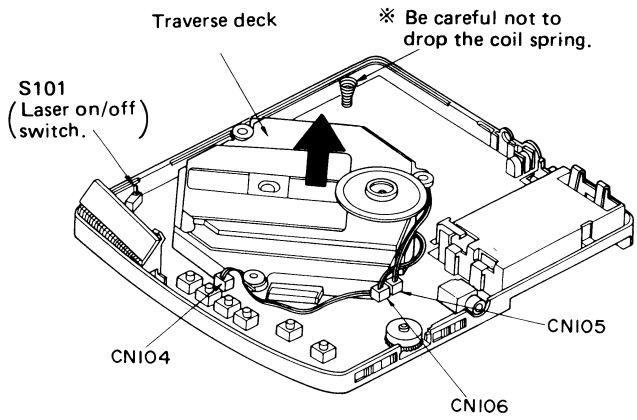


1. Remove the battery cover.
2. Remove the 6 screws (❶ ~ ❻).



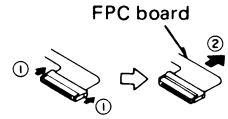
3. Push the open button and open the disc holder.
4. Remove the upper cabinet in the direction of the arrow.

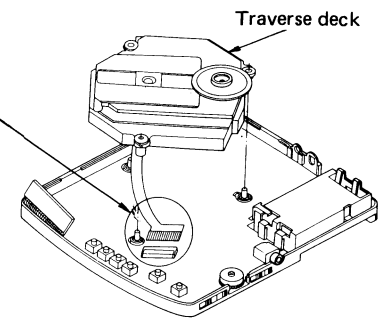
Ref. No. 2	Removal of the traverse deck
Procedure 1→2	



1. Disconnect the connectors (CN104, CN105, CN106).
2. Pull out the traverse deck in the direction of the arrow.

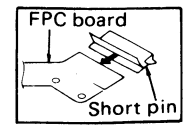
1. Push the top of the connector in the direction of the arrow ①.
2. Remove the FPC board in the direction of the arrow ②.





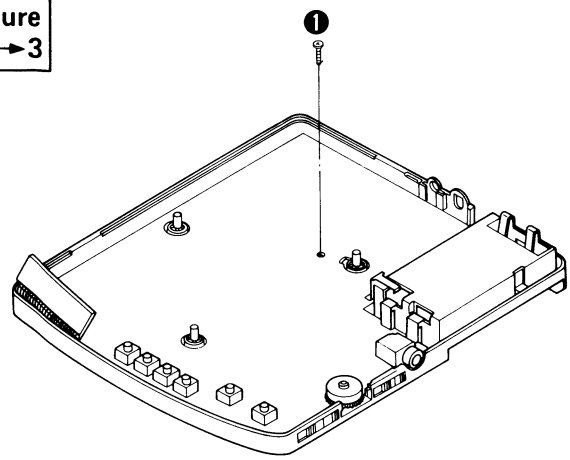
3. Remove the FPC board (CN103).

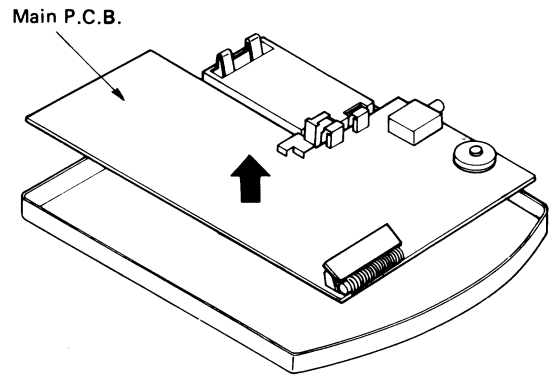
Caution:
Insert a short pin into the traverse deck's FPC board. (Refer to "handling precautions for traverse deck" on page 5.)



Ref. No. 3 — Removal of the main P.C.B.

Procedure 1→2→3

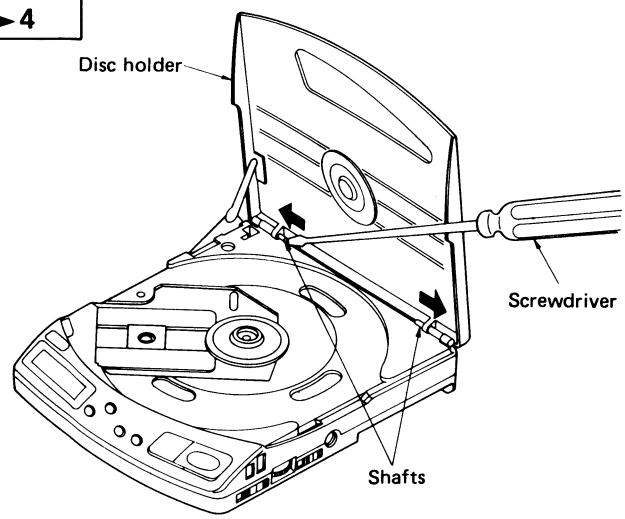


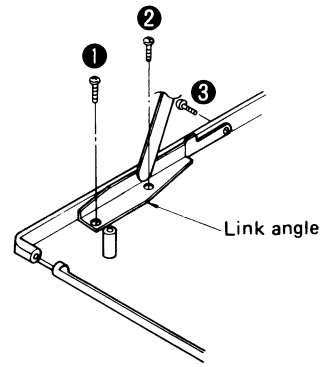


1. Remove the 1 screw (❶).
2. Pull out the main P.C.B. in the direction of the arrow.

Ref. No. 4 — Removal of the disc holder

Procedure 1→4

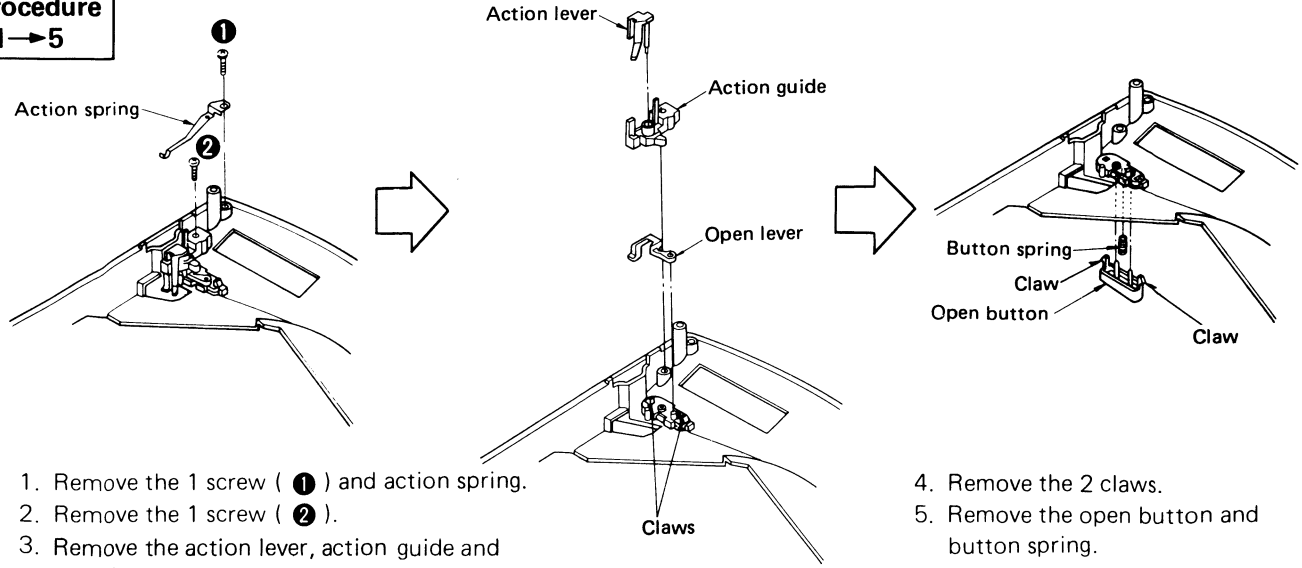




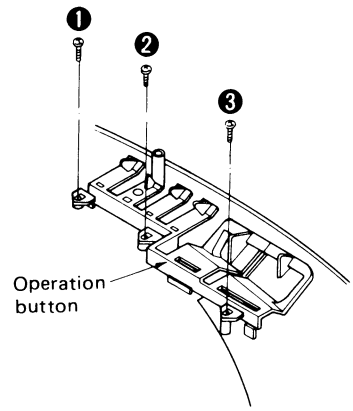
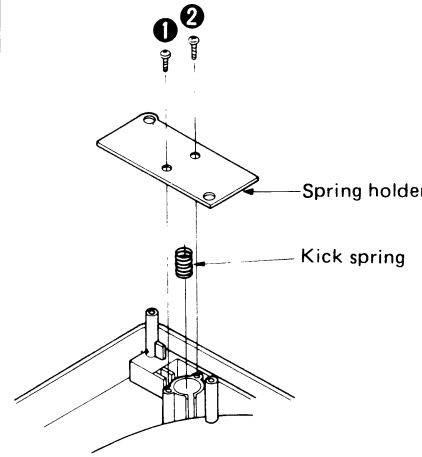
1. Use a screwdriver or similar tool to push the shafts in the direction of the arrow and remove it.
2. Remove the 3 screws (❶ ~ ❸).
3. Remove the link angle.

Ref. No. 5 — Removal of the open button, open lever, action lever and action guide

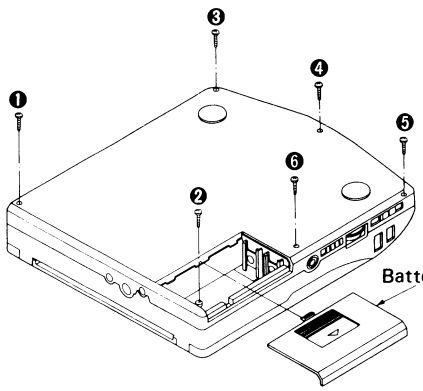
Procedure 1→5



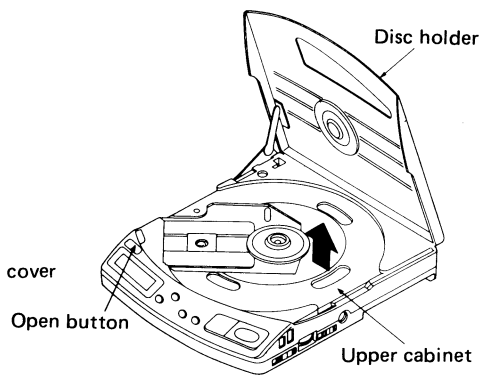
1. Remove the 1 screw (❶) and action spring.
2. Remove the 1 screw (❷).
3. Remove the action lever, action guide and open lever.
4. Remove the 2 claws.
5. Remove the open button and button spring.

Ref. No. 6	Removal of the operation button	Ref. No. 7	Removal of the kick spring
Procedure 1→6		Procedure 1→7	
1. Remove the 3 screws (❶ ~ ❸).		1. Remove the 2 screws (❶ , ❷). 2. Remove the spring holder.	

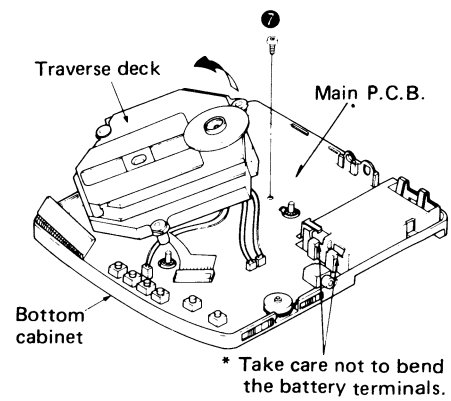
■ HOW TO CHECK THE MAIN P.C.B.



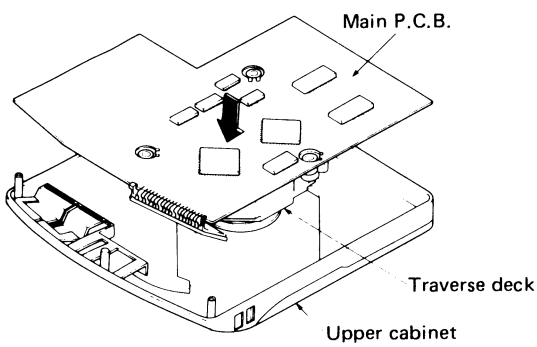
1. Remove the battery cover.
2. Remove the 6 screws (❶~ ❻).



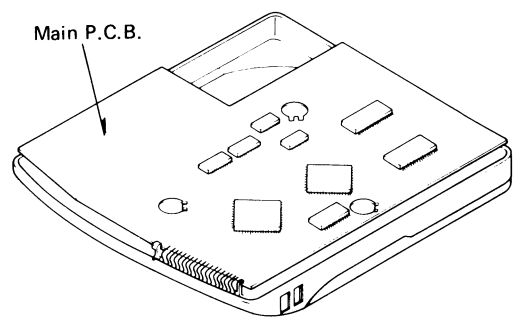
3. Push the open button and open the disc holder.
4. Remove the upper cabinet in the direction of the arrow.



5. Pull out the traverse deck and remove the 1 screw (❼).
6. Replace the traverse deck on the main P.C.B.
7. Remove the traverse deck and the main P.C.B. from the bottom cabinet.



8. Replace the traverse deck and the main P.C.B. on the upper cabinet.



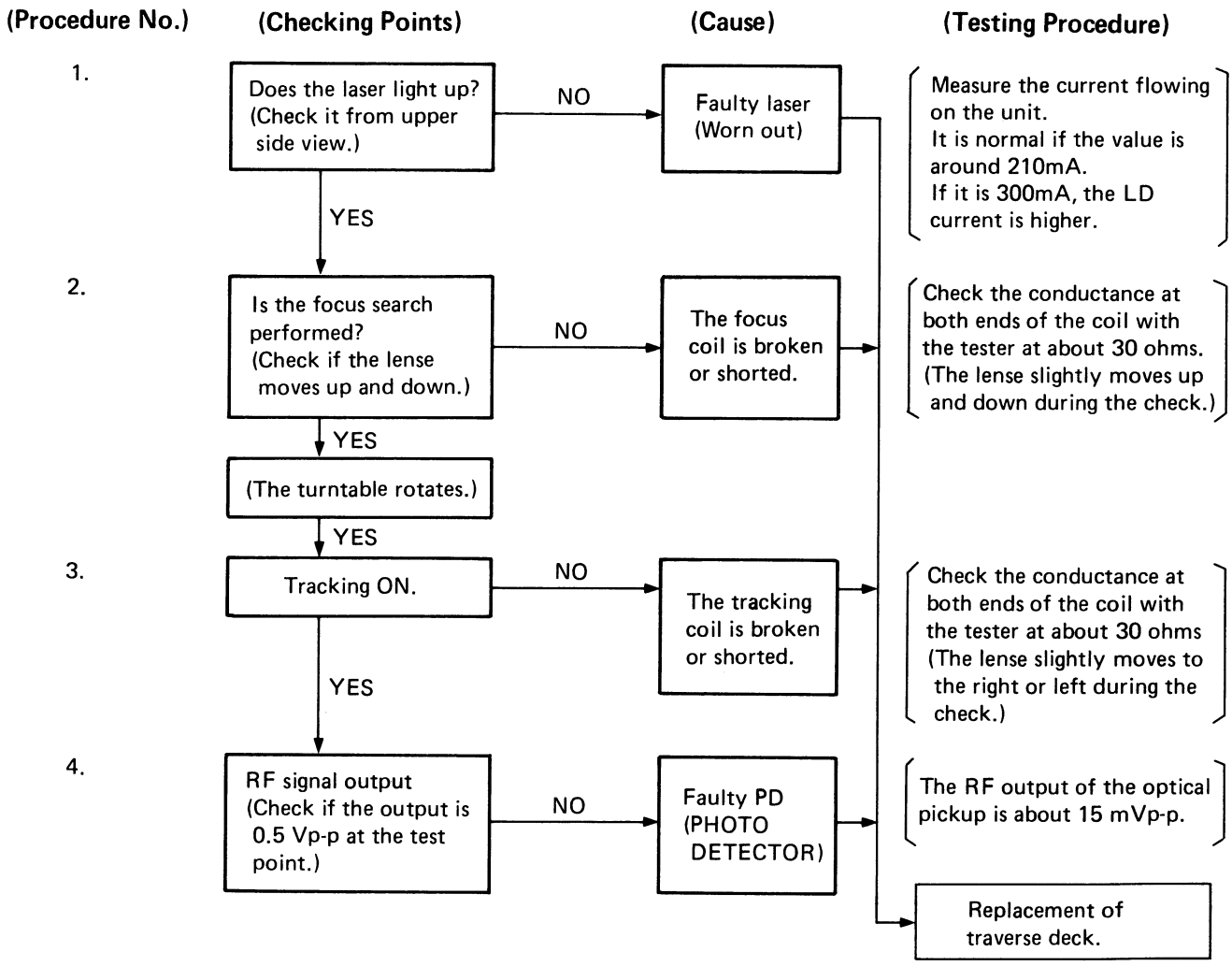
9. Measure the voltage value and waveforms by DC electronic v voltmeter and oscilloscope as shown above.
10. Use the AC adaptor to the mesurement.

■ BEFORE REPLACING TRAVERSE DECK

Check the opeartion of the traverse deck (optical pickup) before replacing it by following the procedures below.

- **Checking the operation of the traverse deck (Optical pickup)**

  Check the operation of the traverse deck (optical pickup) based on the checking points below during the reading of the "TOC" (Table of Contents).


(Procedure No.)
(Checking Points)
(Cause)
(Testing Procedure)
1.
Does the laser light up? (Check it from upper side view.)
NO
Faulty laser (Worn out)
Measure the current flowing on the unit. It is normal if the value is around 210mA. If it is 300mA, the LD current is higher.
YES
2.
Is the focus search performed? (Check if the lense moves up and down.)
NO
The focus coil is broken or shorted.
Check the conductance at both ends of the coil with the tester at about 30 ohms. (The lense slightly moves up and down during the check.)
YES
(The turntable rotates.)
YES
3.
Tracking ON.
NO
The tracking coil is broken or shorted.
Check the conductance at both ends of the coil with the tester at about 30 ohms (The lense slightly moves to the right or left during the check.)
YES
4.
RF signal output (Check if the output is 0.5 Vp-p at the test point.)
NO
Faulty PD (PHOTO DETECTOR)
The RF output of the optical pickup is about 15 mVp-p.
Replacement of traverse deck.

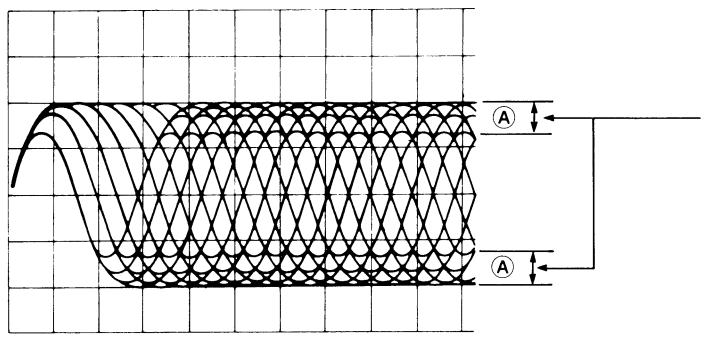
Only the causes of possible problems with regard to the traverse deck (optical pickup) are listed here.
If the traverse deck has operated properly after the testing procedures, then check the circuit.

If the traverse deck has operated properly after the operational checks 1. ~ 4., adjust it again while checking the waveform described in (2) electrical adjustment.

• Electrical adjustment (Make sure to adjust the items in the order shown below.)

(1). Focus balance adjustment (PD balance)
(2). Focus gain adjustment.
(3). Tracking gain adjustment.
(4). Focus offset adjustment.
(5). Tracking offset adjustment.
(6). Tracking balance adjustment.
※(7). Mechanical adjustment.

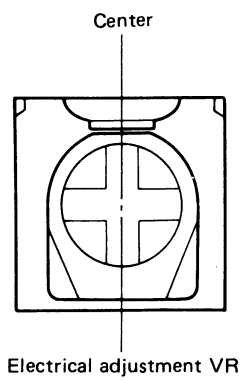
※ With regard to the mechanical adjustment, only perform it if sections Ⓐ of the waveform in the figure below are very large or if the waves are not clearly visible.



• Checking the operation when the traverse deck (optical pickup) is replaced

1. If the electrical adjustment VRs have been turned before replacing the traverse deck (optical pickup), make sure to return each VR to its mechanical center position and then replace the traverse deck (optical pickup).
2. If the mechanical adjustment VRs have not been turned, replace the traverse deck without turning them.
3. After replacing the traverse deck (optical pickup), check its operation (skip and manual search) and make sure that the audio of Track 13 (Black Dot 0.7 mm) and Track 6 (Wedge 0.7 mm) on the test disc (SZZP1054C) are evenly played back and that no noises are heard.
4. If the traverse deck operates properly during the checks, the electrical adjustment is not needed when the traverse deck (optical pickup) is replaced.

• Temporary setting of each VR



Temporary VR setting if any of the electrical adjustment VRs are replaced or require re-adjustment, temporarily set them to the following positions:

■ MEASUREMENTS AND ADJUSTMENTS

Warning : This product uses a laser diode. Refer to caution statements on page 2.
Caution : During adjustment, never connect CH-2 probe's GND to any place for it may short Vref line. (Connect CH-1 probe's GND to specified TP. described in each section.)

Measuring Instruments and Special Tools

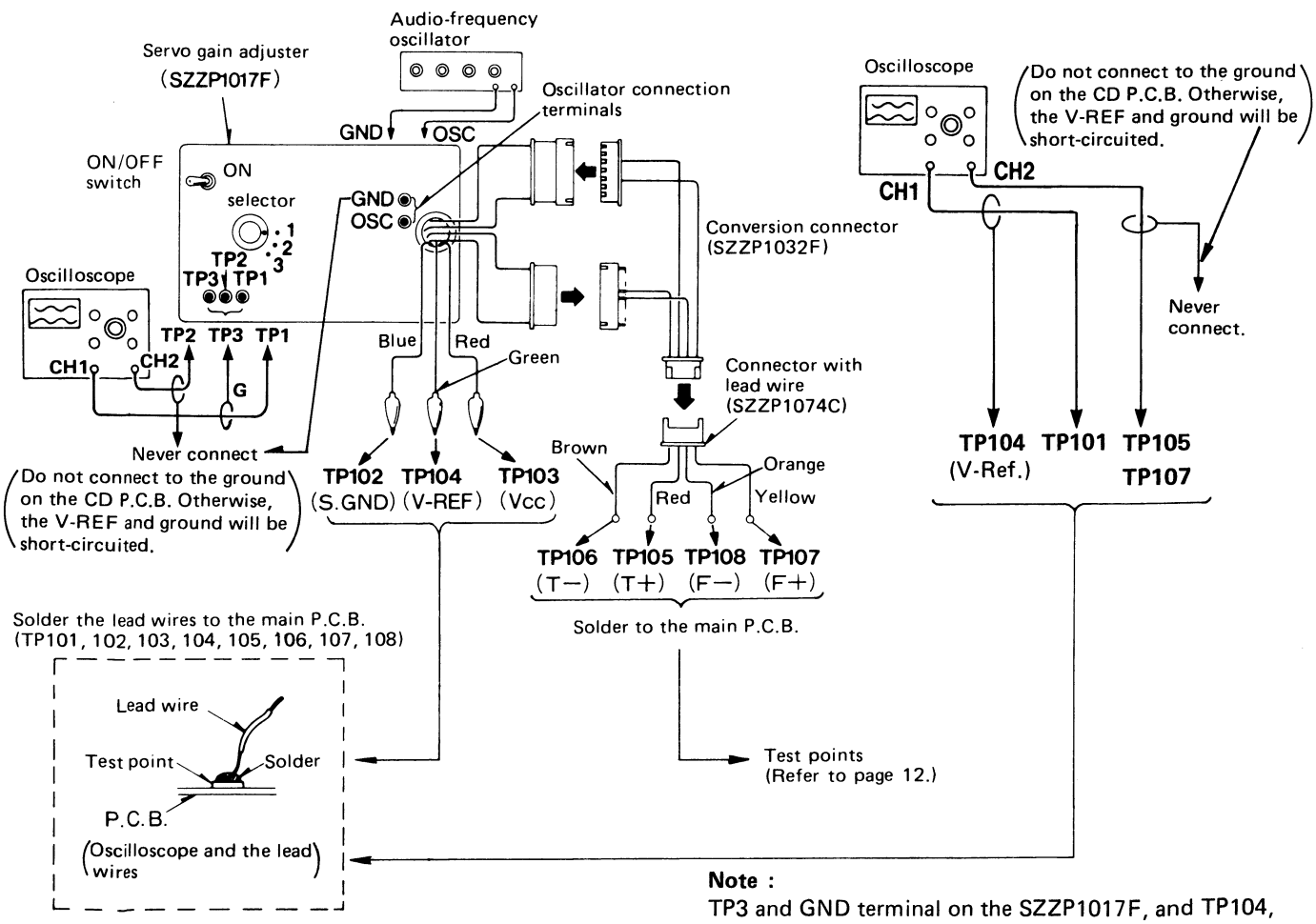
* Servo gain adjuster (SZZP1017F or SZZP1094C)
* Test discs
1. Playability test disc (SZZP1054C)
2. Uneven test disc (SZZP1056C)
3. Black band test disc (SZZP1057C)
* Normal disc
* Dual-beam oscilloscope with bandwidth of 30 MHz or better (with EXT. trigger and 1 : 1 probe).
* Audio-frequency (AF) oscillator
* Conversion connector (SZZP1032F)
* Lead wire (for test points)
* Allen wrench (M2.0) (SZZP1101C)
* Connector with lead wire (SZZP1074C)
* DC voltmeter
* Disc clamper (SDOD39A)

• Preparation for servo gain adjuster

(For tracking gain, focus gain and tracking balance adjustments.)

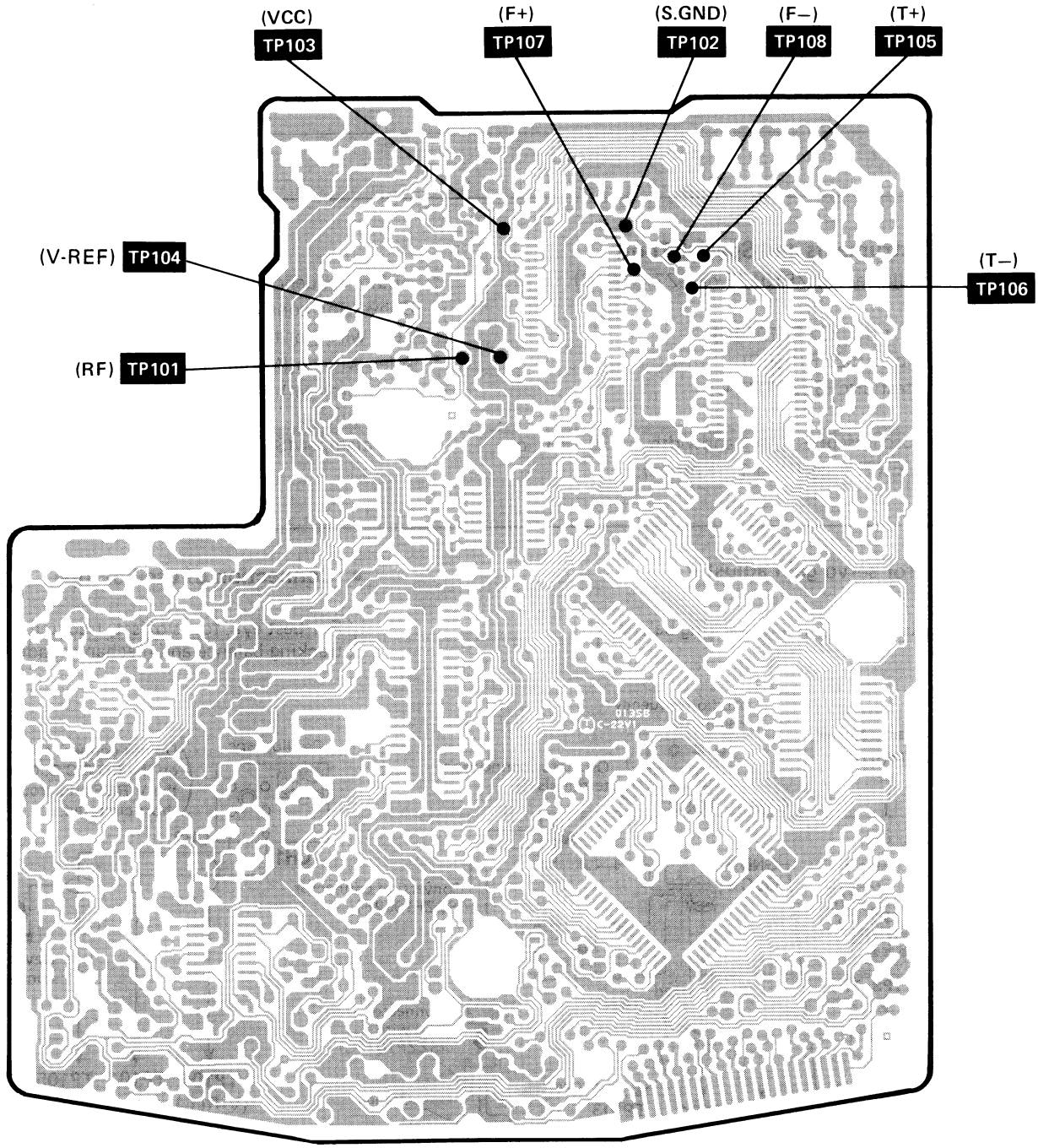
• Connection of oscilloscope

(For best eye, focus offset, tracking offset tracking balance and mechanical adjustments.)



Note :
TP3 and GND terminal on the SZZP1017F, and TP104, chassis of SZZP1017F ARE ALL SAME V-Ref. potential.

- **Test points**

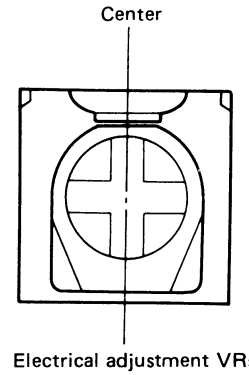

(VCC)
TP103
(F+)
TP107
(S.GND)
TP102
(F–)
TP108
(T+)
TP105
(V-REF) TP104
(T–)
TP106
(RF) TP101

• Precaution for adjustments

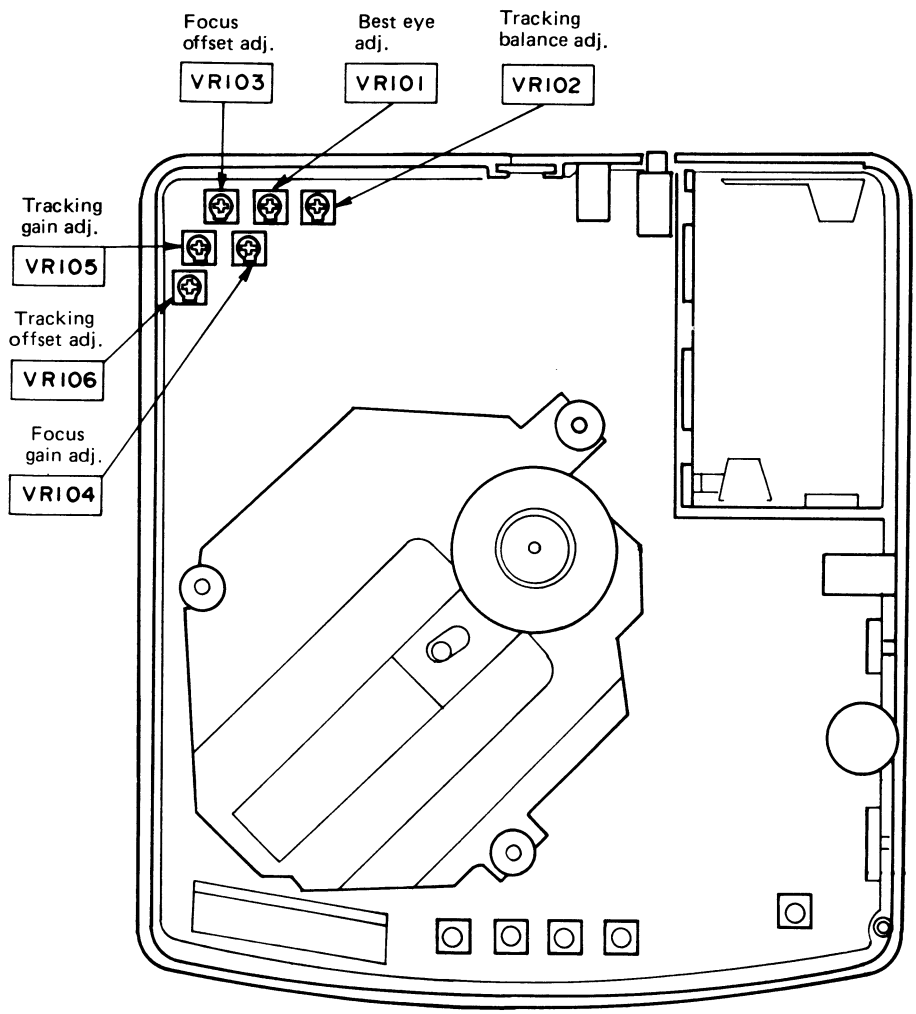
1. Remove the upper cabinet. (Refer to page 6.)
2. Solder the lead wires and connector with lead wire (SZZP1074C) to the test points on the main P.C.B.
3. Confirm the mechanical center.
   In the focus gain adjustment, if **VR104** is turned too far, the rotation of the turntable will stop. Turn a little at a time to the right or left from the mechanical center, and then switch on the power. After finding the position at which rotation starts, repeat the adjustment.
   - If any of the adjustments is substantially out of adjustment, reset the electrical adjustment VRs back to the mechanical center and readjust.

• Temporary setting of each VR

Temporary VR setting if any of the electrical adjustment VRs are replaced or require re-adjustment, temporarily set them to the following positions:

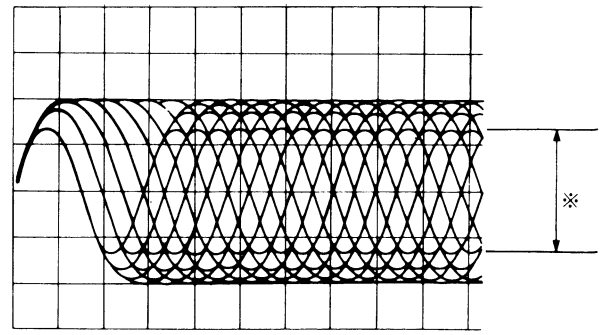


• Adjustment points



(1) BEST EYE (PD BALANCE) ADJUSTMENT

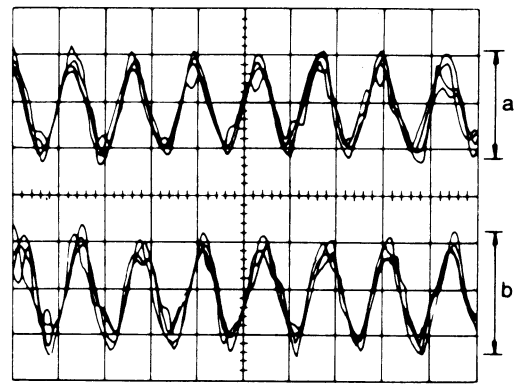
1. Connect the oscilloscope's CH. 1 probe across **TP101** (RF) (+) and **TP104** (V-Ref.) (–) on the main P.C.B.
   Oscilloscope setting: VOLT. . . . . .100 mV
   SWEEP . . . . . .0.5 μs.
   Input coupling . . AC
2. Switch the player power **ON**, and play the 1 kHz (track 1) on the test disc (SZZP1054C).
3. Adjust **VR101** until the vertical fluctuation of RF signal is minimized and the eye pattern is most stretched.



※ Most stretched eye pattern.

(2) FOCUS GAIN ADJUSTMENT

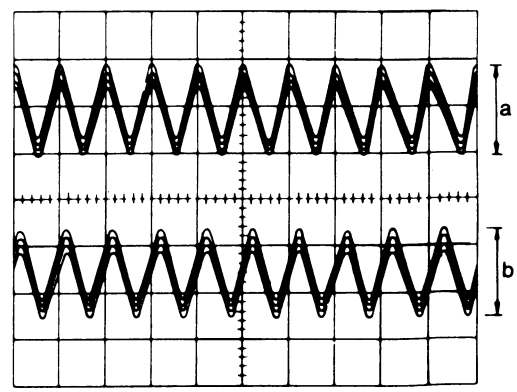
1. Connect the servo gain adjuster to the player.
2. Set the servo gain adjuster's gain switch to position "**2**" and the ON/OFF switch to **ON**.
3. Set up the AF oscillator output for **825 Hz, 200 mVp-p**, and connect it across the OSC and GND terminals on the servo gain adjuster.
4. Connect oscilloscope's CH. 1 and CH. 2 probes to the servo gain adjuster's TP1 and TP2 terminals, respectively (TP3 is GND).
   Oscilloscope setting: VOLT. . . . . .100 mV (both channels)
   SWEEP . . . . . .0.5 ms.
   Input coupling . . AC
5. Play the test disc (SZZP1054C).
6. Set the servo gain adjuster's gain switch to position "**3**", and you will see a 825 Hz signal on the oscilloscope. Adjust **VR104** until the signal amplitudes on both channels become identical to each other.
7. Set the gain switch back to position "**2**".



※ Adjust **VR104** until a equals b.

(3) TRACKING GAIN ADJUSTMENT

1. Set up the AF oscillator output for **1.1 kHz, 200 mVp-p**, and connect it across the OSC and GND terminals on the servo gain adjuster.
2. Connect oscilloscope's CH. 1 and CH. 2 probes to the servo gain adjuster's TP1 and TP2 terminals, respectively (TP3 is GND).
   Oscilloscope setting: VOLT. . . . . .100 mV (both channels)
   SWEEP . . . . . .0.5 ms.
   Input coupling . . AC
3. Switch the player power **ON**, and play the test disc (SZZP1054C).
4. Set the servo gain adjuster's gain switch to position "**1**", and you will see a 1.1 kHz signal on the oscilloscope. Adjust **VR105** until the signal amplitudes on both channels become identical to each other.
5. Set the gain switch back to position "**2**".



※ Adjust **VR105** until a equals b.

• IC102 (AN8374SE2) : Servo processor

Pin No.	Mark	I/O Division	Function
1	LSA	I	Phase difference input (A)
2	LSB	I	Phase difference input (B)
3	TEOFS	I	Tracking offset adjustment
4	TE	O	Tracking gain adjustment
5	TEG	I	
6	TE OUT	O	Tracking error signal output
7	TE BPF	I	Tracking error gain detecting filter
8	FEG	I	Focus gain adjustment
9	FE OUT	O	Focus error signal output
10	CLW	O	Triangular wave oscillator capacitor input
11	VREF	I	Reference voltage input
12	ARF	I	RF signal input
13	CDSL	I	Data slice filter capacitor input
14	FPC	I	Frequency difference signal input
15	GND	I	Ground terminal
16	C. PLL	I	PLL loop filter constant
17	VSS	I	Ground terminal
18	CLK	I	Frequency pull-in clock signal (88.2 kHz) input
19	SRF	O	Sliced and digitized RF signal output
20	PCK	O	Clock output extracted from SRF
21	EFM	O	EFM signal output synchronous with PCK

Pin No.	Mark	I/O Division	Function
22	VDD	I	Power supply (+4.5V input)
23	SPCNT	O	Track crossing speed control output output (Not used, open)
24	SENSE	O	Selector output (track crossing state)
25	TRV	O	Traverse servo control output
26	$\overline{\text{FLOCK}}$	O	Focus lock signal output
27	KICK	O	Track kick signal output
28	LDON	O	Laser power control output
29	VDET	O	Focus/tracking gain up output
30	CNT1	I	Control input ($\overline{\text{FOON}}$: Focus servo ON signal)
31	CNT2	I	Control input ($\overline{\text{TRON}}$: Tracking servo ON signal)
32	CNT3	I	Control input (KICKF: Kick direction (forward) command)
33	CNT4	I	Control input (KICKR: Kick direction (reverse) command)
34	TRVF	I	Traverse forward command signal
35	TRVR	I	Traverse backward command signal
36	$\overline{\text{RFDET}}$	I	RF detection signal input
37	BDO	I	Dropout detection input
38	VCC	I	Power supply (+4.5V input)
39	TVPO	O	Traverse position detecting resistor/capacitor inputs
40	TVPI	I	
41	BROUT	O	Tracking drive control output
42	BRIN	I	Tracking error signal input

• IC103, 104 : (AN8387SE2): Motor & actuator coil drive

Pin No.	Mark	I/O Division	Function
1	VCC	I	Power supply (+4.8V input)
2	INI	I	Spindle motor drive signal input and tracking coil drive signal input
3	PCI	I	Spindle motor ON signal input
4	VREF	I	Reference voltage input
5	P. GND	I	Ground terminal
6			
7	S. GND	I	Ground terminal
8	PC2	I	Traverse motor brake control input
9	IN2	I	Traverse motor drive signal input and focus coil drive signal input
10	VCC	I	Power supply terminal

Pin No.	Mark	I/O Division	Function
11	VLIM2	I	Voltage limit terminal
12	P. VCC	I	Power supply terminal
13	D2+	O	Traverse motor drive signal output and focus coil drive signal output
14	D2–		
15	P. GND	I	Ground terminal
16			
17	D1+	O	Spindle motor drive signal output and tracking coil drive signal output
18	D1–		
19	P. VCC	I	Power supply (+3.8V input)
20	VLIMI	I	Voltage limit terminal

■ TERMINAL FUNCTION OF IC'S

• IC11 : (AN8083SE2) : DC-DC converter control

Pin No.	Mark	I/O Division	Function
1	IN	I	Error amp input
2	FB	O	Error amp output
3	SPRO	I	Short protect input
4	DED	I	Dead time input
5	OUT	O	Switching output
6	GND	I	Ground terminal
7	CT	I	Triangular wave oscillator capacitor input
8	PVCC	I	Power supply terminal

Pin No.	Mark	I/O Division	Function
9	CLK	I	Clock input
10	$\overline{\text{START}}$	I	Start input
11	POWER	I	Power ON/OFF
12	VREF	O	Reference voltage output
13	EMP	O	Empty detection output
14	VSEN	I	Empty detection input
15	RST	O	Reset output
16	VCC	I	Power supply terminal

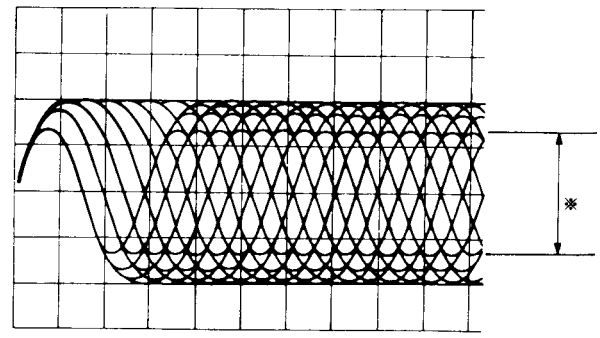
• IC101 (AN8373SE2) : Servo amp.

Pin No.	Mark	I/O Division	Function
1	AMP1	I	RF signal input (X30 amp.) (Not used, connected to GND)
2	PDAD	I	Photo detector current input (A2)
3	PDA	I	Photo detector current input (A1)
4	PDBD	I	Photo detector current input (A4)
5	PDB	I	Photo detector current input (A3)
6	LPD	I	Non-inverting laser power input
7	LD	O	Laser power auto control output
8	FBL1	I	PD balance adjustment
9	FBL2	I	
10	TBL1	I	Tracking balance adjustment
11	TBL2	I	
12	FOOFS	I	Focus offset adjustment
13	IVA	O	Current/voltage conversion output (A)
14	IVB	O	Current/voltage conversion output (B)
15	FE	O	Focus gain adjustment output
16	FPI	I	Focus error signal input
17	TPI	I	Tracking error signal input
18	C. TPL	I	Tracking error filter capacitor input
19	C. TPH		
20	C. FPL	I	Focus error filter capacitor input
21	C. FPH		

Pin No.	Mark	I/O Division	Function
22	TPO	O	Tracking error signal output
23	FPO	O	Focus error signal output
24	FGC	I	Focus gain up signal input
25	TGC	I	Tracking gain up signal input
26	GD	I	Focus/tracking gain down signal input
27	PTO	O	Position detection amp. output (Not used, open)
28	PTI	I	Position detecting amp. output (Not used, open)
29	PBO	O	Position detection buffer output (Not used, open)
30	POT	I	Position detecting buffer input
31	BDO	O	Dropout detection output
32	$\overline{\text{RFDET}}$	O	RF detection signal output
33	SDO	O	Dropout detection pulse output
34	C. SBDO	I	Dropout detecting capacitor input
35	ARF	O	RF signal output
36	C. AGC	I	AGC detecting capacitor input
37	VCC	I	Power supply (+4.5V)
38	LDON	I	Laser power control input
39	RF IN	I	RF signal input
40	AMPO	O	RF signal output (Not used, open)
41	VREF	O	Reference voltage output
42	GND	I	Ground terminal

(7) MECHANICAL ADJUSTMENT

1. Connect the oscilloscope's CH. 1 probe across **TP101** (RF) (+) and **TP104** (V-Ref.) (–) on the main P.C.B.
   Oscilloscope setting: VOLT . . . . . .100 mV
   SWEEP . . . . . .0.5 μs.
   Input coupling . . AC
2. Switch the player power **ON**, and play track **9** on the test disc (SZZP1056C).
3. Leave the player in play mode, and place it as shown below.
4. Alternately adjust the two mechanical adjusting screws with the 2.0mm allen wrench (SZZP1101C) until the vertical fluctuation of RF signal is minimized and the eye pattern is most stretched.
5. After completing the adjustment, lock the **mechanical adjustments** with lock paint (RZZOL01).



※ Most stretched eye pattern.

Note : When adjusting the traverse deck, hold it as shown in the figures.
Adjust it in either of the ways shown in Figure (A) or (B).

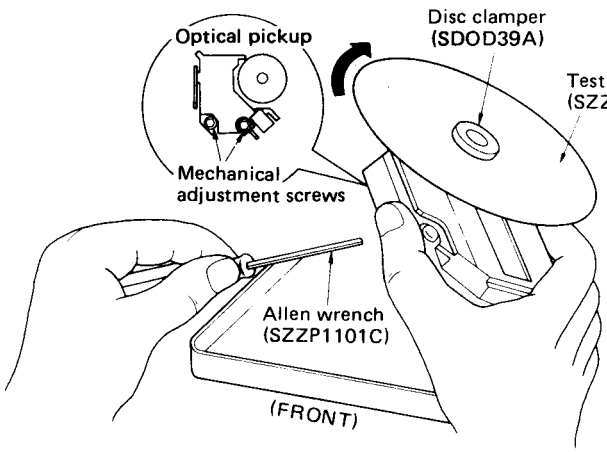
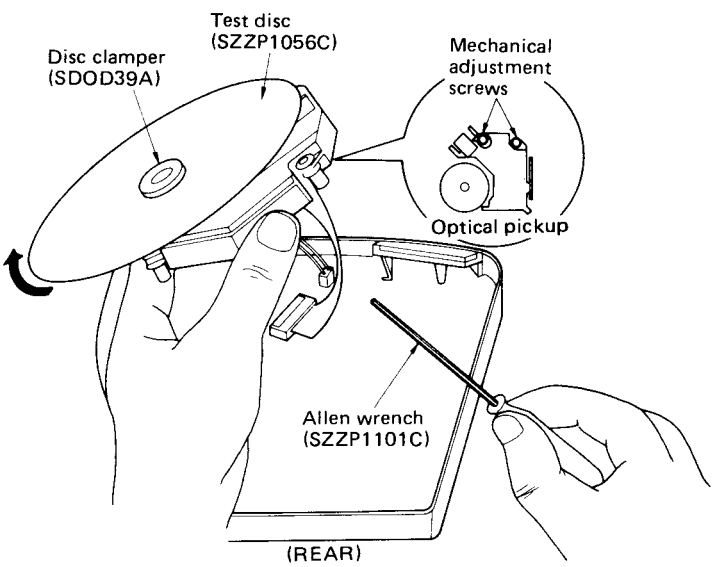


Figure (A)

Figure (B)



(8) CHECK OF PLAY OPERATION AFTER ADJUSTMENT

* **Checking Skip Search**

1. Play an ordinary musical program disc.
2. Press the skip button to check for normal skip search operation (in both the forward and reverse directions).

* **Checking Manual Search**

1. Play an ordinary musical program disc.
2. Press the manual search button to check for smooth manual search operations at either low or high speed (in both the forward and reverse directions).

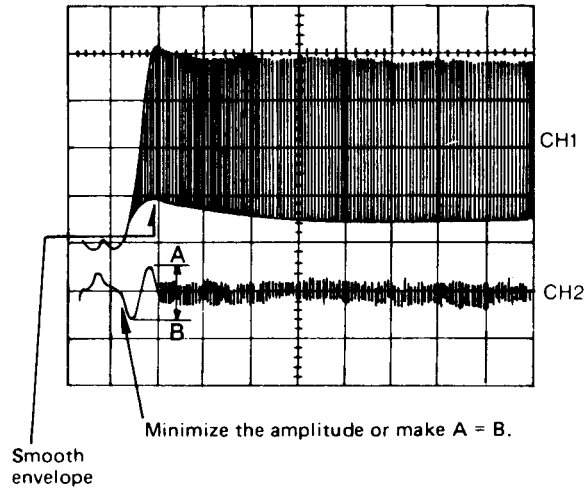
* **Checking Using Defect Disc**

1. Play the 0.7 mm black dot and the 0.7 mm wedge on the defect test disc (SZZP1054C) and verify that no sound skip or noise occurs.
2. Play the middle tracks of the uneven test disc and verify that no sound skip or noise occurs.

(4) FOCUS OFFSET ADJUSTMENT

Note: Disconnect the servo gain adjuster's power cord.

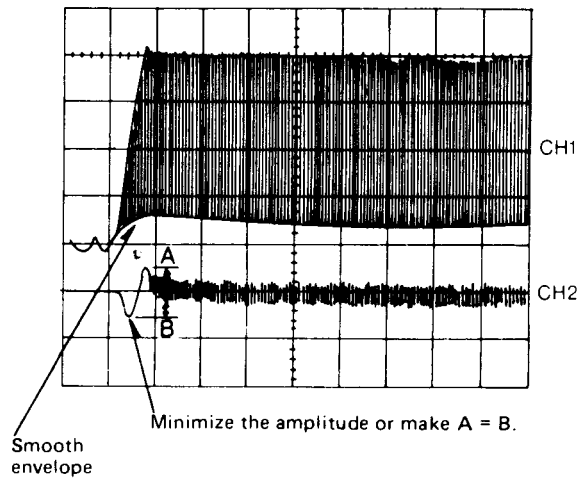
1. Connect the oscilloscope's CH. 1 probe across **TP101** (RF) (+) and **TP104** (V-Ref.) (–) on the main P.C.B., and its CH. 2 probe (+) to **TP107** (F+) terminal.
   Oscilloscope setting: VOLT . . . . . .100 mV (CH. 1)
   500 mV (CH. 2)
   SWEEP . . . . . .0.5 ms.
   Input coupling . . AC (both CH. 1 and CH. 2)
   Trigger mode . . . NORM (trigger CH. 1)
2. Switch the player power **ON**, and play track **9** on the test disc (SZZP1057C).
3. Trigger the oscilloscope's CH. 1 so that the following waveforms are observed. Adjust **VR103** until the dip in the RF signal envelope on CH. 1 is smooth and the signal amplitude on CH. 2 is minimized, i.e. when amplitude A equals amplitude B.



(5) TRACKING OFFSET ADJUSTMENT

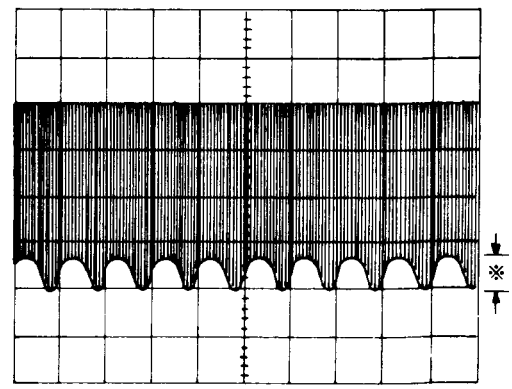
Note: Disconnect the servo gain adjuster's power cord.

1. Connect the oscilloscope's CH. 1 probe across **TP101** (RF) (+) and **TP104** (V-Ref.) (–) on the main P.C.B., and its CH. 2 probe (+) to **TP105** (T+) terminal.
   Oscilloscope setting: VOLT . . . . . .100 mV (CH. 1)
   500 mV (CH. 2)
   SWEEP . . . . . .0.5 ms.
   Input coupling . . AC (both CH. 1 and 2)
   Trigger mode . . . NORM (trigger CH. 1)
2. Switch the player power **ON**, and play track **9** on the test disc (SZZP1057C).
3. Trigger the oscilloscope's CH. 1 so that the following waveforms are observed. Adjust **VR106** until the dip in the RF signal envelope on CH. 1 is smooth and the signal amplitude on CH. 2 is minimized, i.e. when amplitude A equals amplitude B.



(6) TRACKING BALANCE ADJUSTMENT

1. Connect the servo gain adjuster's power cord and make sure that servo gain adjuster's gain switch is set to position "**2**".
2. Set up the AF oscillator output for **1.1 kHz, 600mVp-p**, and connect it across the OSC and GND terminals on the servo gain adjuster.
3. Connect oscilloscope's CH. 1 probe across **TP101** (RF) (+) and **TP104** (V-Ref.) (–) on the main P.C.B. and CH. 2 probe (+) to the OSC terminal on the servo gain adjuster.
   Oscilloscope setting: VOLT . . . . . .100 mV (CH. 1)
   500 mV (CH. 2)
   SWEEP . . . . . .0.5 ms.
   Input coupling . . AC (both CH. 1 CH. 2)
   Trigger mode . . . NORM (trigger CH. 2)
4. Switch the player power **ON**, and play the test disc (SZZP1054C).
5. Set the servo gain adjuster's gain switch to position "**1**", and adjust the **VR102** so that the section of the waveform marked with ※ is balanced on CH. 1.
6. Disconnect the servo gain adjuster's leads from the player.



※ This section of the waveform must be balanced.

• IC201 (MN15845PEQ) : System control

Pin No.	Mark	I/O Division	Function
1	VDD	I	Power supply (connected to +4.8V)
2	OSC1	I	Clock input (4.2336 MHz)
3	OSC2	O	Not used, open
4	TCNT	I	Track count input (trackcross input in rough search)
5	X0	O	Not used, open
6	$\overline{\text{RESET}}$	I	Reset signal input (reset at "L")
7	$\overline{\text{SYNC}}$	O	Not used, open
8	BLKCK	I	Q data read-in timing strobe signal input (sub-code block clock : 75 Hz)
9	$\overline{\text{SIRQ}}$	I	Data clock
10	$\overline{\text{SUBQ}}$	I	Q data read-in input (sub-code Q code)
11	$\overline{\text{SBO}}$	O	Not used, open
12	$\overline{\text{CLDCK}}$	I	Q data read-in data strobe signal input (sub-code block clock : 7.35 kHz)
13 ~ 16	P40 ~ P43	I	Key return signal input
17	MCLK	I/O	Key input strobe and data clock output
18	MDATA	I/O	Key input strobe and data output
19	STROBE	I/O	Key input strobe signal
20	MLD	O	Data strobe signal output (signal processing LSI command load output)
21	$\overline{\text{SENSE}}$	I	Optical servo status (track cross) input
22	$\overline{\text{FLOCK}}$	I	Optical servo status (focus) input
23	BATT	I	Battery voltage detection signal input
24	STAT	I	Processing status input from signal processing LSI
25	CNT4	O	Optical servo IC control signal (KICKR : Kick direction [reverse] command)
26	CNT3	O	Optical servo IC control signal (KICKF : Kick direction [forward] command)
27	CNT2	O	Optical servo IC control signal ($\overline{\text{TRON}}$: Track servo)
28	CNT1	O	Optical servo IC control signal ($\overline{\text{FOON}}$: Focus servo)
29	POWER	O	Power save control (power save at "H")
30	TRREV	O	Traverse motor reverse command signal
31	TRFWD	O	Traverse motor forward command signal
32	MUTE	O	Muting control (muting ON at "H")
33	VLCD 1	I	LCD drive power supply (3.1V)
34	VLCD 2	I	LCD drive power supply (1.5V)
35	VLCD 3	I	LCD drive power supply (0V)
36 ~ 38	COM0 ~ COM2	O	LCD common line output
39	COM3	O	Not used, open
40 ~ 44	SEG0 ~ SEG4	O	LCD segment line output
45 ~ 47	SEG5 ~ SEG7	O	Not used, open
48 ~ 63	SEG8 ~ SEG23	O	LCD segment line output
64	VSS	I	GND terminal

• IC202 (MN6625) : Digital signal processor

Pin No.	Mark	I/O Division	Function
1	BYTCK	O	Serial data byte clock (Not used, open)
2	FCLK	O	Crystal frame clock (7.35 kHz) (Not used, open)
3	DEMPH	O	De-emphasis ON signal (de-emphasis ON at "H")
4	SRDATA	O	Serial data output (MSB first)
5	SCK	O	Serial bit clock output
6	LRCK	O	LR discrimination signal output
7	WDCK	O	Serial data output word clock
8	LDG	O	L channel deglitch signal (Not used, open)
9	RDG	O	R channel deglitch signal (Not used, open)
10	IPFLAG	O	Interpolation flag (interpolation at "H")
11	FLAG	O	Error flag terminal
12	XCK	O	Clock (16.9344MHz) output (Not used, open)
13	$\overline{\text{TEST}}$	I	Test mode selection (Not used, connected to +4.0V)
14	TX	O	Digital signal output (Not used, open)
15	SLEEP	I	Mode selector (Not used, connected to GND) ("L": normal, "H": SLEEP mode)
16	CSEL	I	Test terminal ("L": normal) (Not used, connected to GND)
17	X1	I	Clock input (16.9344 MHz)
18	X2	O	Clock output (16.9344 MHz)
19	VSS	I	GND terminal
20	BLKCK	O	Sub-code block (Q data) clock (75 Hz)
21	$\overline{\text{CLDCK}}$	O	Sub-code frame (Q data) clock (7.35 kHz)
22	$\overline{\text{SUBQ}}$	O	Sub-code (Q data) output
23	$\overline{\text{RST}}$	I	Reset signal input (reset at "L")
24	MLD	I	Command load signal input
25	MCLK	I	Command clock signal input
26	MDATA	I	Command data input
27	DMUTE	I	Muting control
28	$\overline{\text{TRON}}$	I	Tracking servo ON signal (tracking servo ON at "L")
29	STAT	O	Processing condition (CRC, CUE, CLVS, TT STOP, FCLV)
30	SUBC	O	Sub-code serial output data (Not used, open)
31	SBCK	I	Clock for sub-code serial output (Not used, open)
32	SMCK	O	Clock output (4.2336 MHz)
33	VDD	I	Power supply (connected to +4.0V)
34	MEMP	I	Emphasis signal input (Not used, connected to power supply)
35	FG	I	Spindle motor FG signal input (Not used, connected to power supply)
36	PC	O	Spindle motor ON signal (ON at "L")
37	EC	O	Spindle motor drive signal
38	RESY	O	Resynchronizing signal (Not used, open)
39	DO	I	Drop-out signal (Drop-out at "H")
40	SRF	I	EFM signal input (DSL)
41	EFM	I	EFM signal input (PLL)
42	PCK	I	PLL extract clock input (4.3218 MHz)
43	FPC	O	PLL frequency comparision signal
44 ~ 51	D7 ~ D0	I/O	16K RAM data input/output
52	RAM/OE	O	16K RAM $\overline{\text{OE}}$ signal
53	RAM/WE	O	16K RAM $\overline{\text{WE}}$ signal
54 ~ 64	RAM/A0 ~ RAM/A10	O	16K RAM address signal (RAMA0: LSB, RAMA10: MSB)

- IC301 (SM5807ESET) : Digital filter

Pin No.	Mark	I/O Division	Function
1	XT	I	Osicllator input
2	$\overline{XT}$	O	Oscillator output (not used, open)
3	$\overline{CKSL}$	I	$\overline{CKSL}$ = H : External input of 16.9344 MHz or 17.2872 MHz to XT $\overline{CKSL}$ = L : External input of 8.4672 MHz or 8.6436 MHz to XT
4	CKO	O	Clock output (not used, open)
5	LRCI	I	44.1 kHz synchronization clock input
6	DIN	I	Serial data input
7	BCKI	I	Serial data bit clock input
8	VSS	I	Digital ground terminal

Pin No.	Mark	I/O Division	Function
9	$\overline{SCSL}$	I	$\overline{SCSL}$ = H : System clock = 192 fs $\overline{SCSL}$ = L : System clock = 196 fs (fs = sampling frequency)
10	DGR	O	R ch deglitch signal (176.4 kHz) (not used, open)
11	DGL	O	L ch deglitch signal (176.4 kHz) (not used, open)
12	D OUT	O	Serial data output
13	WDCO	O	Output control clock (352.8 kHz)
14	$\overline{LRCO}$	O	Output control clock (176.4 kHz)
15	BCKO	O	Serial bit clock output (8.4672 MHz or 8.6436 MHz)
16	VDD	I	Power supply terminal (connected to +4.8V)

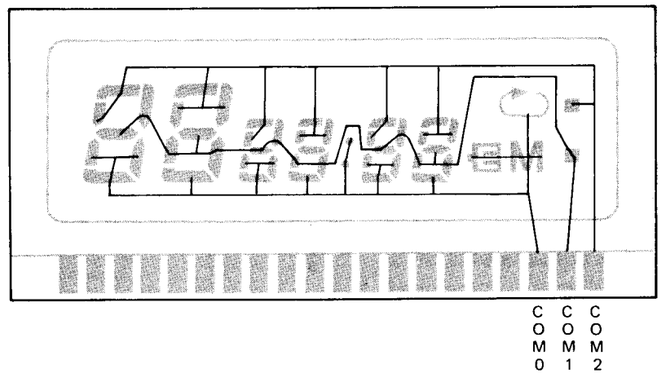
- IC302: (UPD6376GSE1): D/A Converter

Pin No.	Mark	I/O Division	Function
1	NC	–	Not connected
2	D. GND	I	Ground terminal
3	D. VDD	I	Power supply (connected to +4.8V)
4			
5	A. GND	I	Ground terminal
6	R. OUT	O	R ch signal output
7	A. VDD	I	Power supply (connected to +4.8V)
8			
9	R. REF	O	R ch reference voltage capacitor output

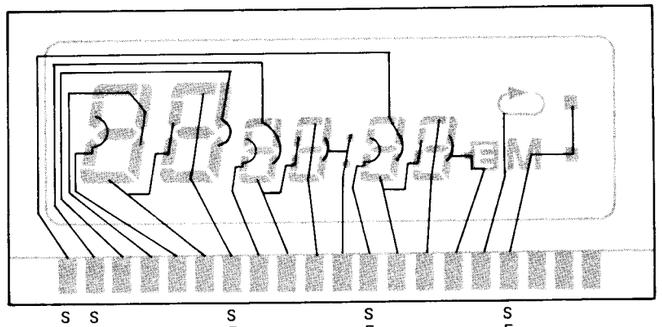
Pin No.	Mark	I/O Division	Function
10	L. REF	O	L ch reference voltage capacitor output
11	L. OUT	O	L ch signal output
12	A. GND	I	Ground terminal
13	LRCK	I	L/R clock signal input
14	LRSEL	I	L/R clock selector (Not used, connected to power supply)
15	SI	I	Serial data signal input
16	SLK	I	Serial bit clock input

■ INTERNAL CONNECTIONS OF LCD (Liquid crystal display)

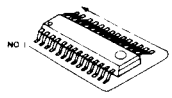
- Common connection diagram



- Segment connection diagram

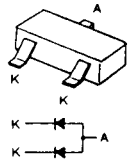


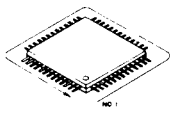
■TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES



NJM3415MT1	8pin	SM5807ESET	16pin
AN8373SE2	42 pin	UPD6376GSE1	
AN8374SE2		AN8083SE2	
AN8387SE2	20pin	LC3517BML15T	24pin

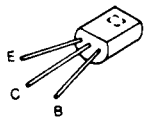
MA151WATW

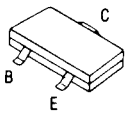




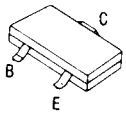
MN15845PEQ	64pin
MN6625	

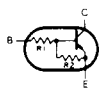
2SD1302STTA



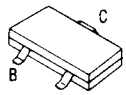


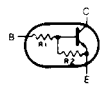
2SD1328STTW,
2SB970QRSTW,
2SB709QRSTW,
2SD1757KQSTW





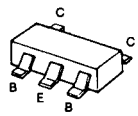
DTA114EKT97,
DTA124TKT97,
DTA144TKT97,
2SD601QRSTW



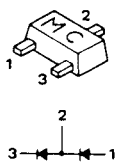


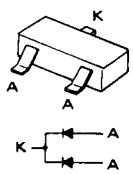
DTC114TKT97

FMG4T98



MA153TW



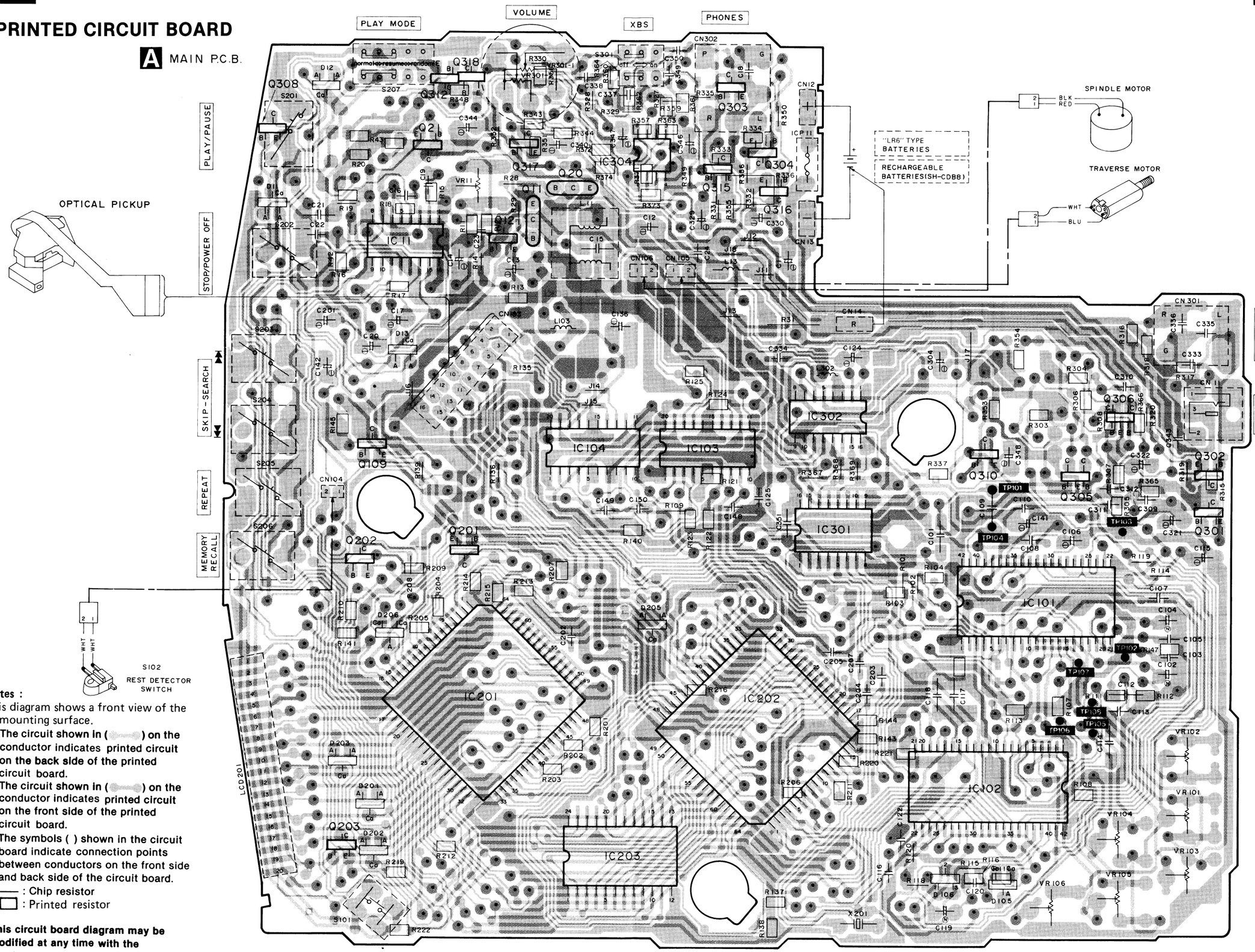


MA151WKTW

SL-NP1

■ PRINTED CIRCUIT BOARD

A MAIN P.C.B.



Notes :

This diagram shows a front view of the IC mounting surface.

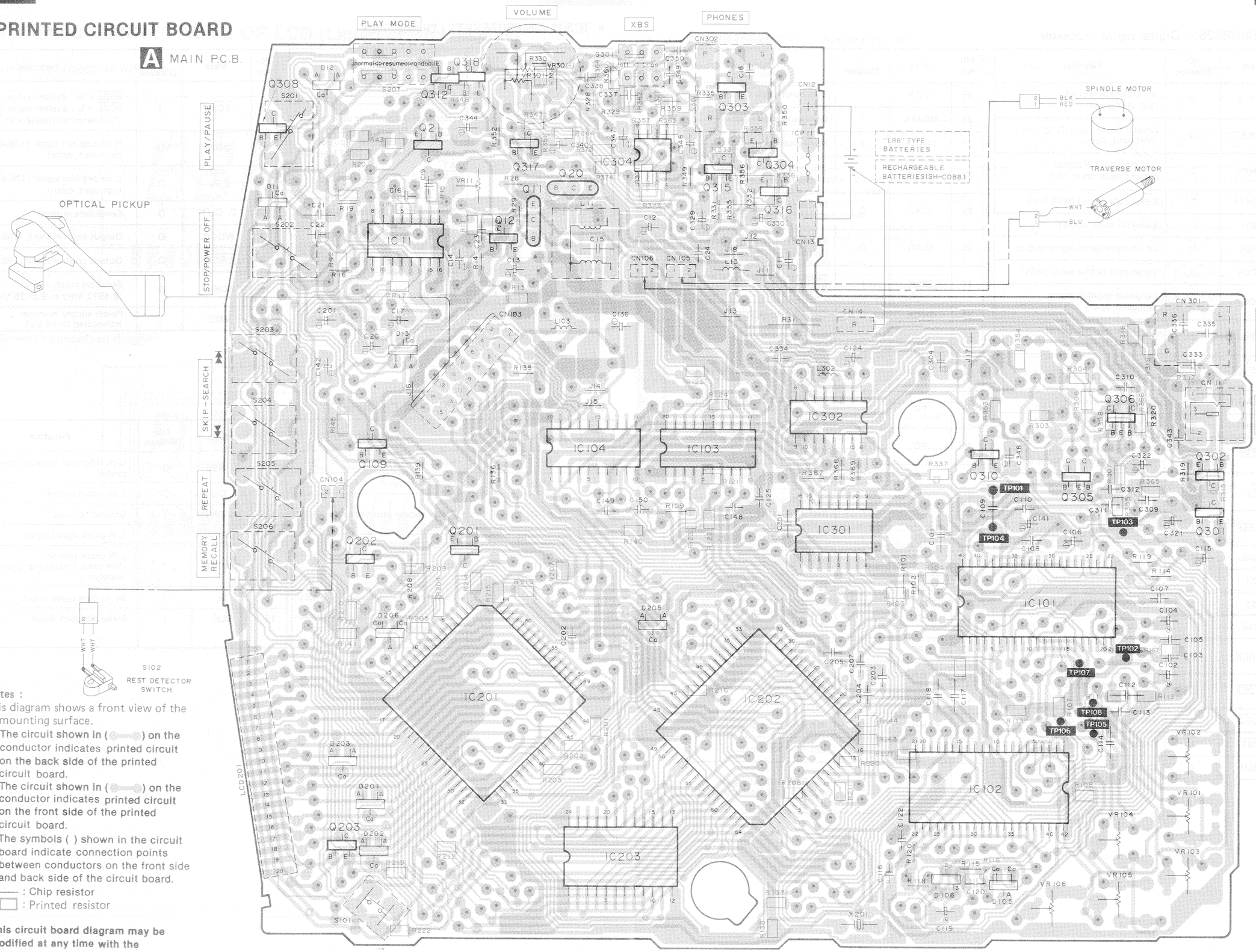
1. **The circuit shown in ( ) on the conductor indicates printed circuit on the back side of the printed circuit board.**
2. **The circuit shown in ( ) on the conductor indicates printed circuit on the front side of the printed circuit board.**
3. **The symbols ( ) shown in the circuit board indicate connection points between conductors on the front side and back side of the circuit board.**
4. —— : Chip resistor
5. ▭ : Printed resistor

- **This circuit board diagram may be modified at any time with the developement of new technology.**

SL-NP1

■ PRINTED CIRCUIT BOARD

A MAIN P.C.B.



Notes :

This diagram shows a front view of the IC mounting surface.

1. The circuit shown in ( ) on the conductor indicates printed circuit on the back side of the printed circuit board.
2. The circuit shown in ( ) on the conductor indicates printed circuit on the front side of the printed circuit board.
3. The symbols ( ) shown in the circuit board indicate connection points between conductors on the front side and back side of the circuit board.
4. —— : Chip resistor
5. ▭ : Printed resistor

• This circuit board diagram may be modified at any time with the developement of new technology.

■ SCHEMATIC DIAGRAM (Parts list on pages 36 ~ 38.)

(This schematic diagram may be modified at any time with the development of new technology.)

Note 1 :

- **S101** : Laser ON/OFF switch in "**off**" position. (It turns "**on**" with disc holder closed.)
- **S102** : Rest switch in **"off"** position. (It turns "**on**" when optical pickup comes to innermost periphery.)
- **S201** : Play/pause switch.
- **S202** : Stop/power off switch.
- **S203** : Skip/search (Forward) switch.
- **S204** : Skip/search (Backward) switch.
- **S205** : Repeat switch.
- **S206** : Memory/recall switch.
- **S207** : Play mode selector switch. (random ←→ resume ←→ normal)
- **S301** : XBS switch in "**off**" position.
- The voltage value and waveforms are the reference voltage of this measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of GND terminal (DC IN Jack). Accordingly, there may arise some error in the voltage values and waveforms depending upon the internal impedance of the tester or measuring unit.
  * The parenthesized is the voltage for test disc (1 kHz, L + R, 0 dB) in play mode, and the other, for no disc in stop mode.
  * AC adaptor (SH-CDA6U) is used for power supply.
- —≺≻— : Positive voltage lines.
  ▒▒▒▒▒ : Aduio signal lines.
- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

* Caution !

IC and LSI are sensitive to static electricity.

Secondary trouble can be prevented by taking care during repair.

* Cover the parts boxed made of plastics with aluminum foil.
* Ground the soldering iron.
* Put a conductive mat on the work table.
* Do not touch the legs of IC or LSI with fingers directly.

Note 2 :

- The resistors with reference numbers marked with an asterisk (※) are printed resistors on PC boards.
- When one of these resistors requires replacement, see "How to replace printed resistors."
- The resistors enclosed in red boxes ▒□▒ in the PCB drawings are printed resistors.
- This parts list shows the replacement resistors for printed resistors (Refer to page 38).

"How to replace printed resistors"

1. Using a cutter, cut through the middle of the defective printed resistor.
2. Find through holes that connect the resistor to the other side of the PC board, and locate copper foil spots where soldering is possible (Fig. 1).
3. Solder a carbon resistor (1/8W) with the same resistance value as that indicated in the schematic diagram across the located copper foil spots.
4. Pass insulation sleeves over the resistor leads to avoid ahort circuit failure.

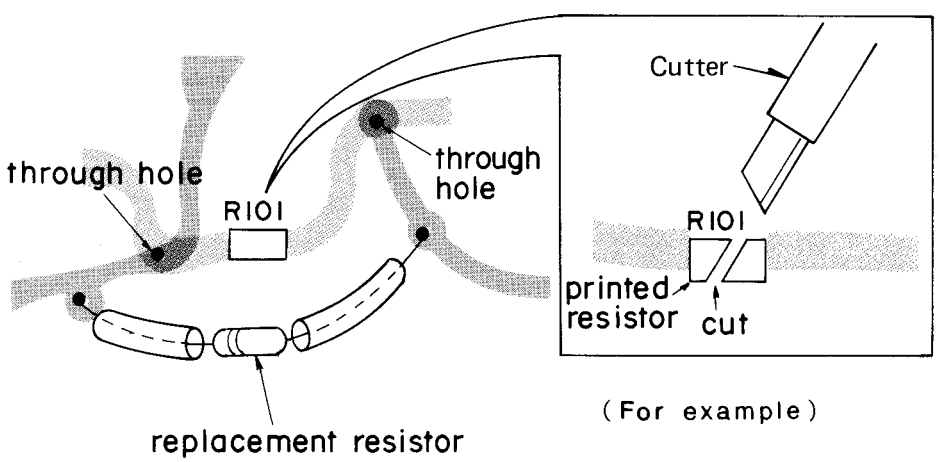
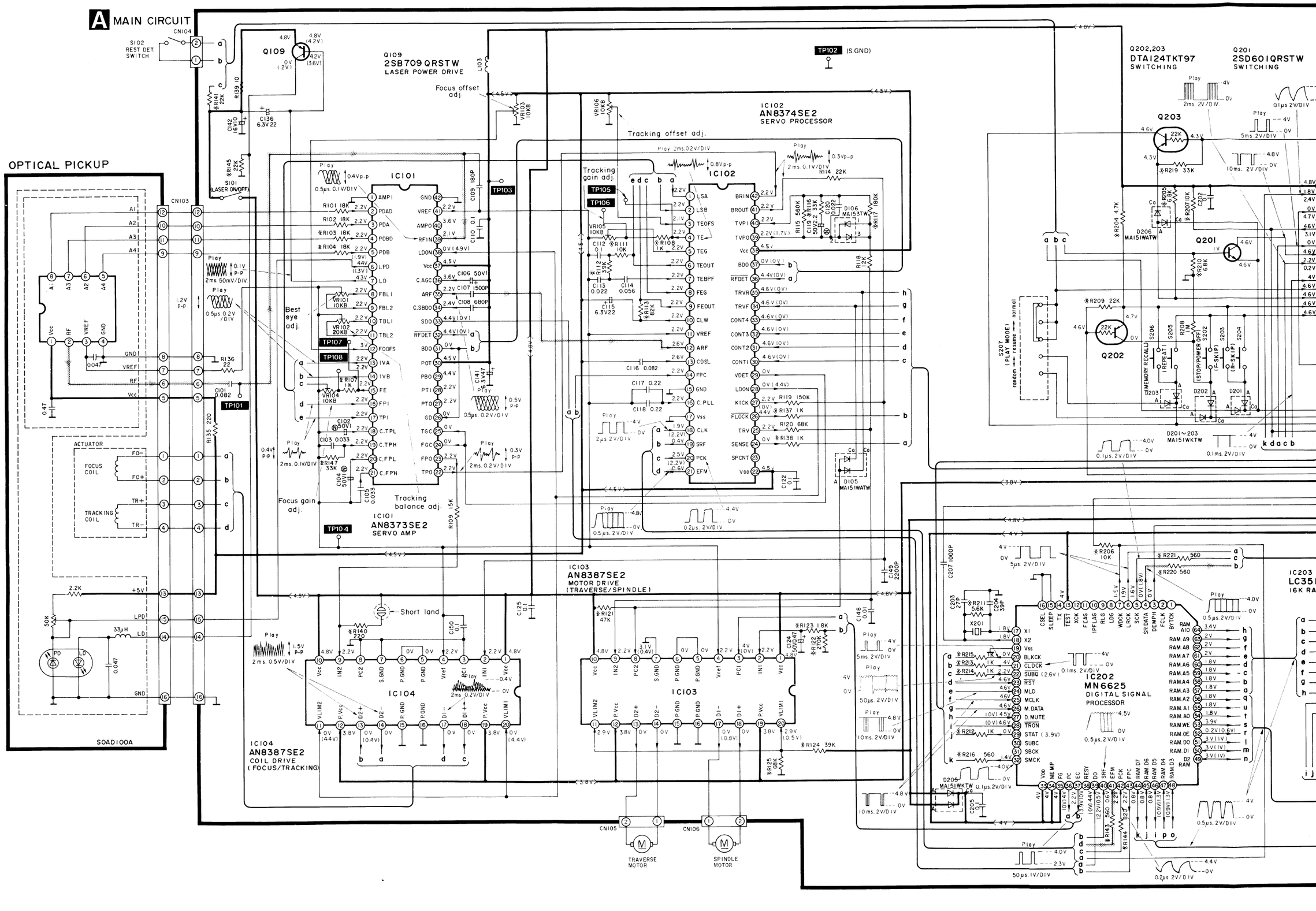


Fig. 1


A MAIN CIRCUIT
OPTICAL PICKUP
SOAD100A
ACTUATOR
FOCUS COIL
TRACKING COIL
CN104
S102 REST DET. SWITCH
S101 (LASER ON/OFF)
CN103
Q109
2SB709QRSTW
LASER POWER DRIVE
IC101
AN8373SE2
SERVO AMP
IC102
AN8374SE2
SERVO PROCESSOR
IC103
AN8387SE2
MOTOR DRIVE (TRAVERSE/SPINDLE)
IC104
AN8387SE2
COIL DRIVE (FOCUS/TRACKING)
Q202,203
DTA124TKT97
SWITCHING
Q201
2SD601QRSTW
SWITCHING
IC202
MN6625
DIGITAL SIGNAL PROCESSOR
IC203
LC35
16K RA
TP101
TP102 (S.GND)
TP103
TP104
TP105
TP106
TP107
TP108
Focus offset adj.
Tracking offset adj.
Tracking gain adj.
Best eye adj.
Focus gain adj.
Tracking balance adj.
Short land
CN105
CN106
TRAVERSE MOTOR
SPINDLE MOTOR

9 10 11 12 13 14 15 16 17 18

LCD201 (EDD042CA0A3P)

■ (RESUME)

M (RANDOM)

Q202,203
DTA124TKT97
SWITCHING

Q201
2SD601QRSTW
SWITCHING

IC11
AN8083SE2
DC-DC CONVERTER CONTROL

IC201
MN15845PEQ
SYSTEM CONTROL & LCD DRIVE

Q21
2SB709QRSTW
SWITCHING (RESET)

Q12
2SD1328STTW
CONSTANT VOLTAGE

Q20

Q11

Q318
DTA114EKT97
MUTING CONT.

Q308,312
DTC114TKT97
MUTING CONT./RESET

Q11,20
2SD1302STTA
CONSTANT VOLTAGE

Q305

Q306

Q301

Q302

Q301,302
2SD1757KQSTW
MUTING

Q310
DTA144TKT97
SWITCHING (DE-EMPHASIS)

Q305,306
FMG4T98
SWITCHING (RESET/DE-EMPHASIS)

Q317
DTC114TKT97
SWITCHING (RESET)

Q303,304,315,316
2SD1757KQSTW
MUTING

IC202
MN6625
DIGITAL SIGNAL PROCESSOR

IC203
LC3517BML15T
16K RAM

IC301
SM5807ESET
DIGITAL FILTER

IC302
UPD6376GSE1
D/A CONVERTER

IC304
NJM3414MT1
HEADPHONES AMP

D206 MA151WATW

D201~203 MA151WKTW

D11 MA151WKTW

D12 MA151WKTW

D13 MA151WKTW

VCC

Voltage adj.

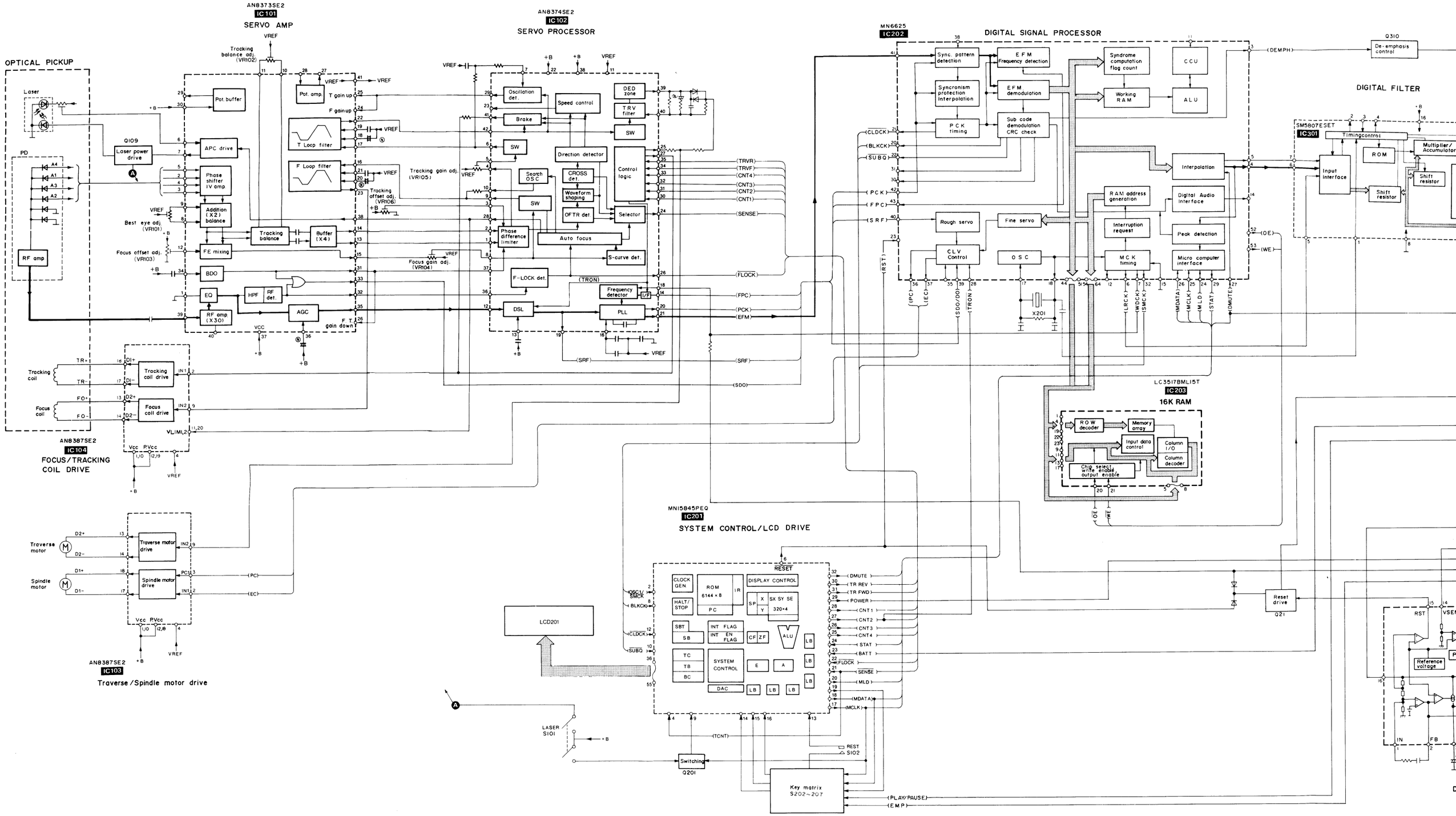
DC IN 3V

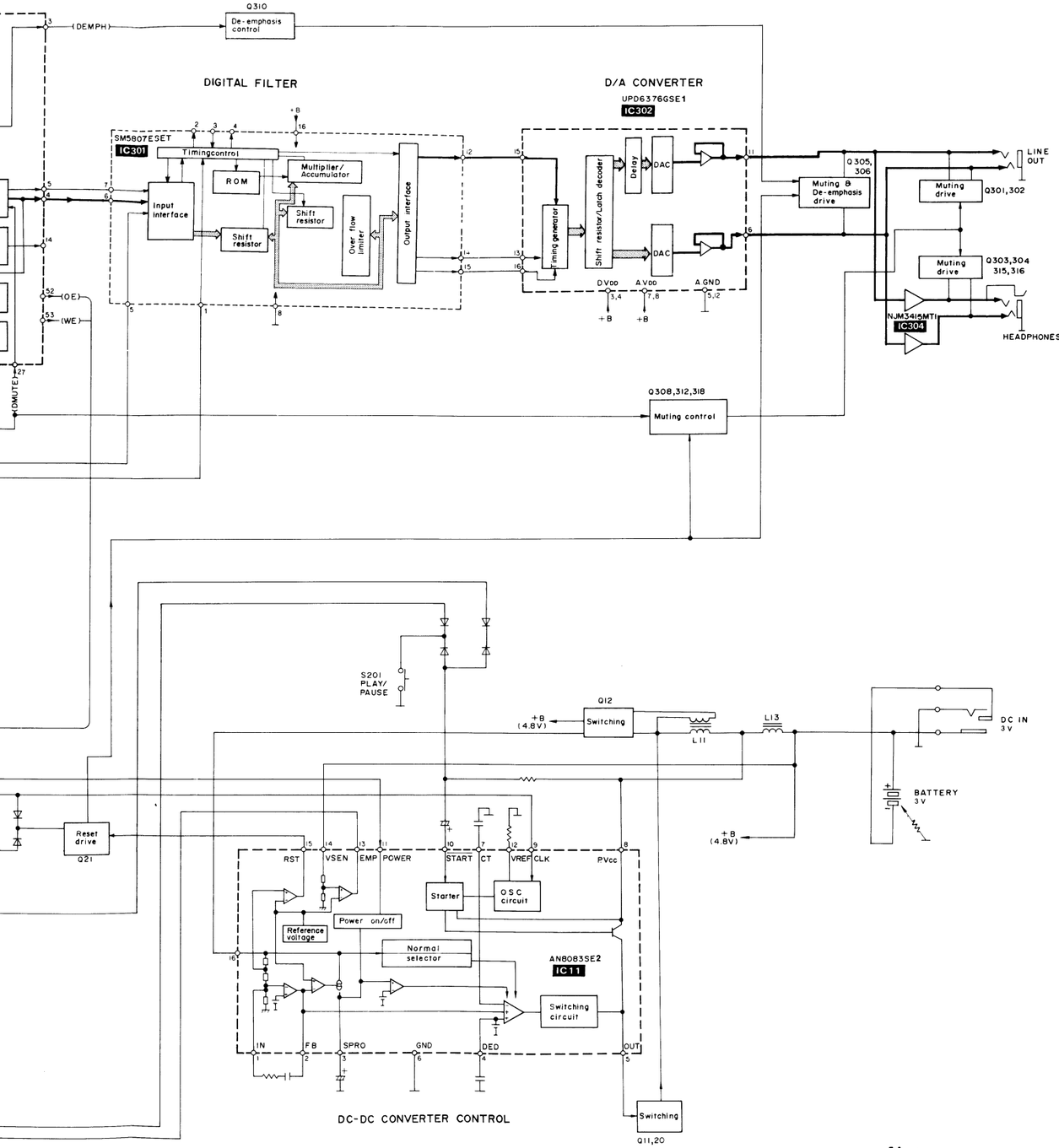
BATTERY 3V

LINE OUT

HEADPHONES

■ BLOCK DIAGRAM



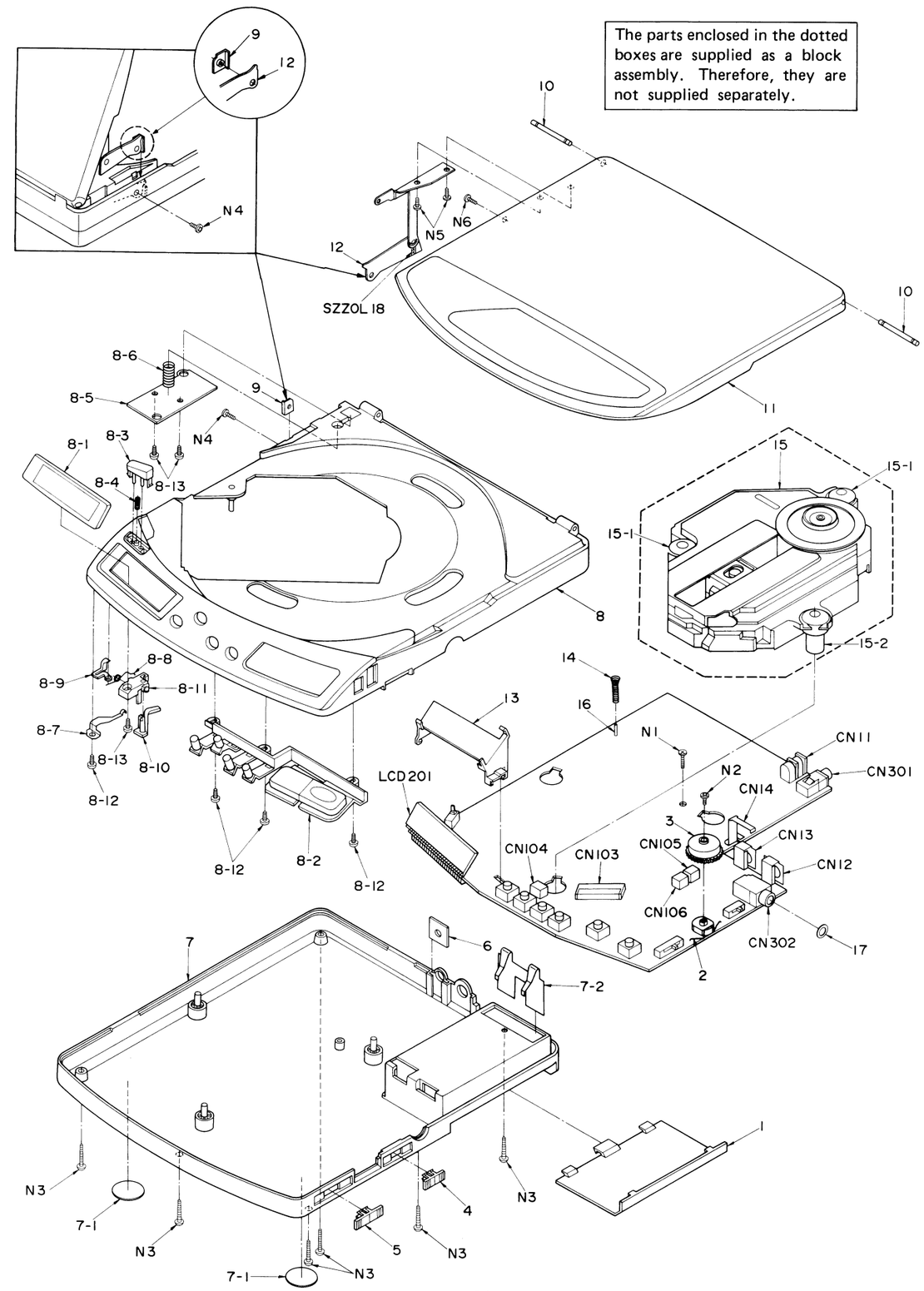


Note:

→ Audio signal

■ EXPLODED VIEW

The parts enclosed in the dotted boxes are supplied as a block assembly. Therefore, they are not supplied separately.



■ REPLACEMENT PARTS LIST

Notes : * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* **Warning:** This product used a laser diode. Refer to caution statements on page 2.

Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS	
1	RKK0009-K	BATTERY COVER	
2	RME0044-1	EARTH SPRING	
3	SBND90ZK0A	KNOB, H. P. VOLUME	
4	RGV0004-K	KNOB, XBS	
5	RGV0005-K	KNOB, MODE	
6	RMA0110	BRACKET (REAR)	
7	RFKJLNP1P-K	BOTTOM CABINET ASS'Y	
7-1	SHGD54-1	FOOT	
7-2	RJC93001-1	BATTERY TERMINAL (COMMON)	
8	RYK0048	INTERMEDIATE CABINET ASS'Y	
8-1	RKW0036	ORNAMENT (FRONT)	
8-2	RGU0125-K3	BUTTON, OPERATION	
8-3	RGU0126-K1	BUTTON, OPEN	
8-4	RMB0055-2	SPRING (BUTTON)	
8-5	RMA0188	SPRING HOLDER	
8-6	RMB0054-2	SPRING (KICK)	
8-7	RMC0027-2	SPRING (ACTION)	
8-8	RMC0028-2	SPRING (LEVER)	
8-9	RML0083-2	OPEN LEVER	
8-10	RMR0150-5	ACTION LEVER	
8-11	RMR0151-3	ACTION GUIDE	
8-12	XTN17+4J	SCREW	
8-13	XTN17+6GFZ	SCREW	
9	RMA0112-2	STOPPER ANGLE	
10	RMS0105	SHAFT (DUST COVER)	
11	RFKKLNP1P-K	DUST COVER ASS'Y	
12	RXA0005-2	LINK ANGLE ASS'Y	
13	RJF0002-2	LCD HOLDER	
14	RMB0124	COIL SPRING	
15	SODD100Z	TRAVERSE DECK UNIT	
15-1	SHGD157	RUBBER SPACER	
15-2	SHGD125	RUBBER SPACER	
16	RJP162ZA	PIN	
17	RHW66001	WASHER	
		SCREW (S)	
N1	XTN17+4J	SCREW	
N2	XQN17+C3FZ	SCREW	
N3	XTN17+6GFZ	SCREW	
N4	RHE5155YA	SCREW	
N5	RHE5068ZA	SCREW	
N6	RHE5097ZA	SCREW	

Ref. No.	Part No.	Part Name & Description	Remarks
		PACKING MATERIAL	
P1	RPQ0054	PAD (ACCESSORIES)	
P2	RPQ0059	SPACER	
P3	RPQ0092	ACCESSORIES BOX	
P4	RPF0046	PROTECTION BAG	
P5	RPH0035-1	MIRROR SHEET	
P6	RPH0036-1	POLYETHLENE SHEET	
P7	RPK0143	PACKING CASE	
P8	RPN0213	PAD (BOTTOM)	
P9	RPN0214-2	PAD (TOP)	
P10	SPSD14	PROTECTION SHEET	
P11	RPN0365	T. T SPACER	
		ACCESSORIES	
A1	RFC0005-1	SHOULDER BELT	
A2	RFEA301C-X	AC ADAPTOR	⚠
A3	SJPD5-2K	STEREO CONNECTION CABLE	
A4	RQA0003	WARRANTY CARD	(P)
A4	SQX7185	WARRANTY CARD	(PC)
A5	RQT0441-P	INSTRUCTION MANUAL	(P)
A5	RFKSLNP1PC-K	INST. MANUAL ASS'Y	(PC)
A6	SQX9129-1	SERVICENTERLIST	(P)

Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)	
IC11	AN8083SE2	IC, DC-DC CONV. CONT.	
IC101	AN8373SE2	IC, SERVO AMP	
IC102	AN8374SE2	IC, SERVO PROCESSOR	
IC103, 104	AN8387SE2	IC, MOTOR/COIL DRIVE	
IC201	MN15845PEQ	IC, SYSTEM CONT. & LCD DRIVE	
IC202	MN6625	IC, DIGITAL SIGNAL PROCESSOR	
IC203	LC3517BML15T	IC, 16K RAM	
IC301	SM5807ESET	IC, DIGITAL FILTER	
IC302	UPD6376GSE1	IC, D/A CONVERTER	
IC304	NJM3415MT1	IC, HEADPHONES AMP	
		I. C. PROTECTOR	
ICP11	SRUN50T	IC, PROTECTOR	
		TRANSISTOR(S)	
Q11	2SD1302STTA	TRANSISTOR	
Q12	2SD1328STTW	TRANSISTOR	
Q20	2SD1302STTA	TRANSISTOR	
Q21	2SB709QRSTW	TRANSISTOR	
Q109	2SB709QRSTW	TRANSISTOR	
Q201	2SD601QRSTW	TRANSISTOR	
Q202, 203	DTA124TKT97	TRANSISTOR	
Q301-304	2SD1757KQSTW	TRANSISTOR	
Q305, 306	FMG4T98	TRANSISTOR	
Q308	DTC114TKT97	TRANSISTOR	
Q310	DTA144TKT97	TRANSISTOR	
Q312	DTC114TKT97	TRANSISTOR	
Q315, 316	2SD1757KQSTW	TRANSISTOR	
Q317	DTC114TKT97	TRANSISTOR	
Q318	DTA114EKT97	TRANSISTOR	
		DIODE(S)	
D11-13	MA151WKTW	DIODE	
D105	MA151WATW	DIODE	
D106	MA153TW	DIODE	
D201-203	MA151WKTW	DIODE	
D205	MA151WKTW	DIODE	
D206	MA151WATW	DIODE	
		VARIABLE RESISTOR(S)	
VR11	EVNDXAA00B33	V. R, VOLTAGE ADJ.	
VR101	EVNDXAA00B14	V. R, BEST EYE ADJ.	
VR102	EVNDXAA00B24	V. R, TRACKING BALANCE ADJ.	
VR103	EVNDXAA00B14	V. R, FOCUS OFFSET ADJ.	
VR104	EVNDXAA00B14	V. R, FOCUS GAIN ADJ.	
VR105	EVNDXAA00B14	V. R, TRACKING GAIN ADJ.	
VR106	EVNDXAA00B14	V. R, TRACKING OFFSET ADJ.	
VR301	EVUBPAT50C54	V. R, HEADPHONES	

Ref. No.	Part No.	Part Name & Description	Remarks
		COIL(S)	
L11	RLZ0002	COIL	
L13	RLQB330KT-K	COIL	
L103	SLQDNL330KT	COIL	
L302	RLB0003	COIL	
		OSCILLATOR(S)	
X201	RSXZ16M9M01T	OSCILLATOR	
		CHIP JUMPER (S)	
J11-16	ERJ6GEY0R00V	CHIP JUMPER	
J17	ERJ8GEY0R00V	CHIP JUMPER	
J18	ERJ6GEY0R00V	CHIP JUMPER	
		JACK(S) & CONNECTOR(S)	
CN11	RJJ4301	DC IN JACK	
CN12, 13	RJC30002-3	BATTERY TERMINAL	
CN14	RJH5101-4	TERMINAL	
CN103	RJU035T016	CONNECTOR(35P)	
CN104-106	EMCS0255B	CONNECTOR	
CN301	RJJD3S5ZA-C	LINEOUT JACK	
CN302	RJJD5S3MZA-C	HEADPHONES JACK	
		LCD	
LCD201	EDD042CA0A3P	L. C. D.	
		SWITCH(ES)	
S101	RSH1A91ZA-A	SW, LASER ON/OFF	
S102	SSHD5	SW, REST DET.	
S201	EVQQTJ04M	SW, PLAY/PAUSE	
S202	EVQQTJ04M	SW, STOP/POWER OFF	
S203	EVQQTJ04M	SW, F. SKIP/SEARCH	
S204	EVQQTJ04M	SW, R. SKIP/SEARCH	
S205	EVQQTJ04M	SW, REPEAT	
S206	EVQQTJ04M	SW, MEMORY/RECALL	
S207	ESD11H230	SW, PLAY MODE SELECTOR	
S301	ESD11H220	SW, XBS	

■ RESISTORS & CAPACITORS

Notes : * Capacity valuse are in microfarads (uF) unless specified otherwise, P=Pico-farads(pF) F=Farads(F)
* Resistance values are in ohms, unless specified otherwise, 1K=1,000(OHM) , 1M=1,000k(OHM)

Ref. No.	Part No.	Values & Remarks
		RESISTORS
R14	ERJ6GEYJ100V	1/10W 10
R16	ERJ6GEYJ333V	1/10W 33K
R19	ERJ6GEYJ105V	1/10W 1M
R28, 29	ERJ6GEYJ220V	1/10W 22
R31	SRR06J6R8TNR	1W 6.8
R101, 102	ERJ6GEYJ183V	1/10W 18K
R109	ERJ6GEYJ153V	1/10W 15K
R114	ERJ6GEYJ223V	1/10W 22K
R115	ERJ6GEYJ564V	1/10W 560K
R118	ERJ6GEYJ123V	1/10W 12K
R119	ERJ6GEYJ154V	1/10W 150K
R120	ERJ6GEYJ683V	1/10W 68K
R135	ERJ6GEYJ221V	1/10W 220
R136	ERJ6GEYJ220V	1/10W 22
R139	ERJ6GEYJ100V	1/10W 10
R208	ERJ6GEYJ105V	1/10W 1M
R319, 320	ERJ6GEYJ821V	1/10W 820
R328	ERJ6GEYJ123V	1/10W 12K
R329, 330	ERJ6GEYJ104V	1/10W 100K
R331, 332	ERJ6GEYJ100V	1/10W 10
R335	ERJ6GEYJ821V	1/10W 820
R349, 350	ERJ6GEYJ471V	1/10W 470
R352	ERJ6GEYK2R2V	1/10W 2.2
R355, 356	ERJ6GEYJ100V	1/10W 10
R359, 360	ERJ6GEYJ105V	1/10W 1M
R367	ERJ6GEYJ821V	1/10W 820
R368, 369	ERJ6GEYJ561V	1/10W 560
		CAPACITORS
C11, 12	ECEA1AK470I	10V 47U
C13	SRX01C470GNJ	16V 47U
C14	ECEA0JK101I	6.3V 100U
C15	ECUV1C105ZFM	16V 1U
C16	ECUV1E103KBN	25V 0.01U
C17	ECEA1EK4R7I	25V 4.7U
C18	ECUV1H102KBN	50V 1000P
C19	ECUV1E103KBN	25V 0.01U
C20	ECEA1EK4R7I	25V 4.7U
C21	ECUV1C104KBM	16V 0.1U
C22	ECUV1H331KBN	50V 330P
C23	ECUV1H470KCN	50V 47P
C24	ECUV1C104ZFN	16V 0.1U

Ref. No.	Part No.	Values & Remarks
C101	ECUV1C823KBM	16V 0.082U
C102	ECEA1HKN010I	50V 1U
C103	ECUV1C333KBN	16V 0.033U
C104	ECEA1HKN010I	50V 1U
C105	ECUV1C333KBN	16V 0.033U
C106	ECEA1HK010I	50V 1U
C107	ECUV1H152KB	50V 1500P
C108	ECUV1H681KBN	50V 680P
C109	ECKR1H181KB5	50V 180P
C110	ECUV1C104ZFN	16V 0.1U
C112	ECUV1C104KBM	16V 0.1U
C113	ECUV1C223KBN	16V 0.022U
C114	ECUV1C563KBM	16V 0.056U
C115	ECEA0JK220I	6.3V 22U
C116	ECUV1E823KB	25V 0.082U
C117, 118	ECUV1C224KBM	16V 0.22U
C119	ECEA1HKN2R2I	50V 2.2U
C120	ECUV1C223KBN	16V 0.022U
C122	ECUV1C104ZFN	16V 0.1U
C124	ECEA1HKR47I	50V 0.47U
C125	ECUV1C104ZFN	16V 0.1U
C136	ECEA0JK220I	6.3V 22U
C141	ECEA0JK470I	6.3V 47U
C142	ECEA1CK100I	16V 10U
C148	ECUV1E103KBN	25V 0.01U
C149	ECUV1H222KBN	50V 2200P
C150	ECUV1C104ZFN	16V 0.1U
C201	ECEA1HK010I	50V 1U
C202	ECUV1C104ZFN	16V 0.1U
C203	ECUV1H270KCN	50V 27P
C204	ECUV1H390KCN	50V 39P
C205	ECUV1C104ZFN	16V 0.1U
C207	ECUV1H102KBN	50V 1000P
C304	ECEA0JPK101I	6.3V 100U
C309, 310	ECUV1C333KBN	16V 0.033U
C311	ECUV1H332KBN	50V 3300P
C312	ECUV1H332KCB	50V 3300P
C321, 322	ECEA0JK330I	6.3V 33U
C329, 330	ECEA0GK221I	6.3V 220U
C333, 334	ECUV1C104ZFN	16V 0.1U
C335, 336	ECUV1H681KBN	50V 680U
C337, 338	ECUV1E393KBN	25V 0.039U
C340	ECEA0JK101I	6.3V 100U
C343	ECUV1C104ZFN	16V 0.1U
C344	ECEA0JKS331I	6.3V 330U
C346, 347	ECEA1CK100I	16V 10U
C348	ECEA1HK010I	50V 1U
C349, 350	ECUV1H102KBN	50V 1000P
C351	ECUV1C104KBM	16V 0.1U

Ref. No.	Part No.	Values & Remarks

■ REPLACEMENT RESISTORS FOR PRINTED RESISTORS

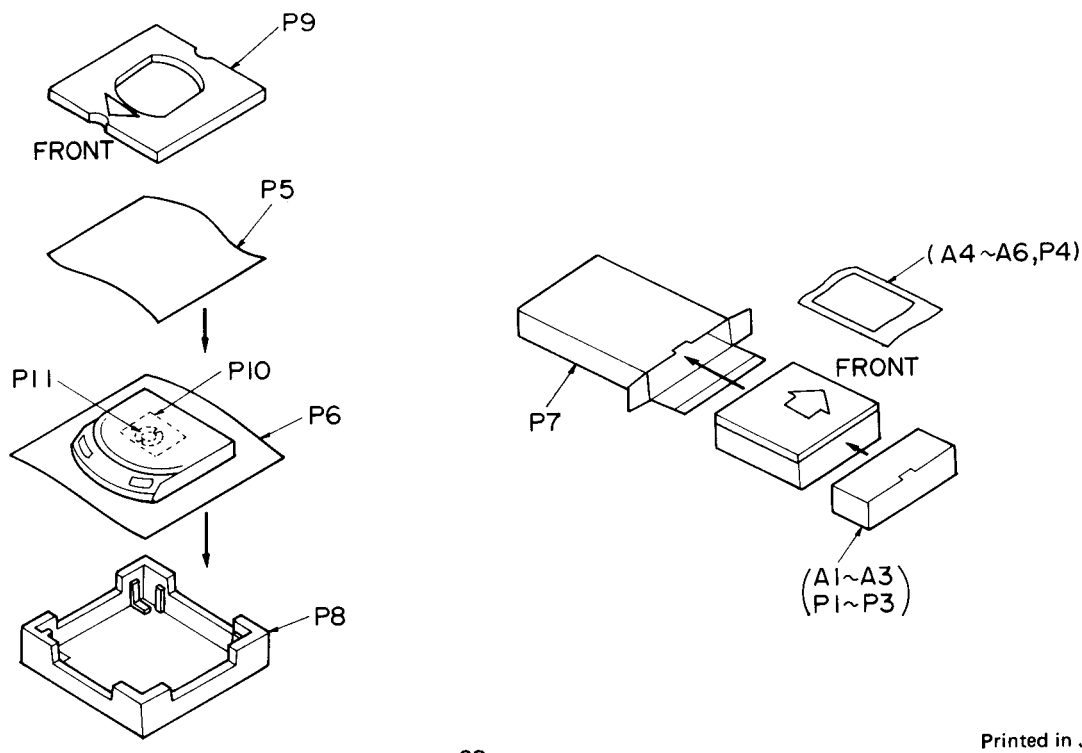
This parts list shows the replacement resistors for printed resistors.

Ref. No.	Part No.	Value
RESISTORS		
R11	ERDS2TJ223	22K
R12	ERDS2TJ222	2.2K
R13	ERDS2TJ222	2.2K
R15	ERDS2TJ333	33K
R17	ERDS2TJ333	33K
R18	ERDS2TJ101	100
R20	ERDS2TJ224	220K
R42	ERDS2TJ224	220K
R43	ERDS2TJ223	22K
R103	ERDS2TJ183	18K
R104	ERDS2TJ183	18K
R107	ERDS2TJ102	1K
R108	ERDS2TJ102	1K
R111	ERDS2TJ103	10K
R112	ERDS2TJ393	39K
R113	ERDS2TJ823	82K
R116	ERDS2TJ333	33K
R117	ERDS2TJ184	180K
R121	ERDS2TJ473	47K
R122	ERDS2TJ274	270K
R123	ERDS2TJ182	1.8K
R124	ERDS2TJ393	39K
R125	ERDS2TJ683	68K
R137	ERDS2TJ102	1K
R138	ERDS2TJ102	1K
R140	ERDS2TJ221	220
R141	ERDS2TJ223	22K

Ref. No.	Part No.	Value
R143	ERDS2TJ561	560
R144	ERDS2TJ821	820
R145	ERDS2TJ223	22K
R147	ERDS2TJ333	33K
R201	ERDS2TJ473	47K
R202	ERDS2TJ473	47K
R203	ERDS2TJ473	47K
R204	ERDS2TJ472	4.7K
R205	ERDS2TJ682	6.8K
R206	ERDS2TJ103	10K
R207	ERDS2TJ103	10K
R209	ERDS2TJ223	22K
R210	ERDS2TJ682	6.8K
R211	ERDS2TJ562	5.6K
R212	ERDS2TJ102	1K
R213	ERDS2TJ102	1K
R214	ERDS2TJ102	1K
R215	ERDS2TJ102	1K
R216	ERDS2TJ561	560
R219	ERDS2TJ333	33K
R220	ERDS2TJ561	560
R221	ERDS2TJ561	560
R222	ERDS2TJ102	1K
R304	ERDS2TJ102	1K
R305	ERDS2TJ471	470
R306	ERDS2TJ471	470
R307	ERDS2TJ104	100K
R308	ERDS2TJ104	100K

Ref. No.	Part No.	Value
R315	ERDS2TJ122	1.2K
R316	ERDS2TJ122	1.2K
R317	ERDS2TJ473	47K
R318	ERDS2TJ473	47K
R327	ERDS2TJ123	12K
R333	ERDS2TJ104	100K
R334	ERDS2TJ104	100K
R336	ERDS2TJ821	820
R337	ERDS2TJ562	5.6K
R343	ERDS2TJ473	47K
R344	ERDS2TJ473	47K
R348	ERDS2TJ474	470K
R351	ERDS2TJ471	470
R354	ERDS2TJ102	1K
R357	ERDS2TJ123	12K
R358	ERDS2TJ123	12K
R361	ERDS2TJ223	22K
R362	ERDS2TJ223	22K
R363	ERDS2TJ392	3.9K
R364	ERDS2TJ392	3.9K
R365	ERDS2TJ102	1K
R366	ERDS2TJ122	1.2K
R371	ERDS2TJ682	6.8K
R372	ERDS2TJ682	6.8K
R373	ERDS2TJ392	3.9K
R374	ERDS2TJ392	3.9K

■ PACKING



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K900316300YU/TN

ORDER NO. AD9007217S9

Service Manual

Compact Disc Player

SL-PS70

Supplement

COMPACT disc DIGITAL AUDIO

DIGITAL

Color

(K)... Black Type

Area

Country Code	Area	Color
(E)	Continental Europe.	(K)
(EB)	Great Britain.	
(EG)	F.R. Germany & Italy.	
(GC)	Asia, Latin America, Middle Near East and Africa.	
(GN)	Oceania.	
(PX)	Far East-PX.	

Please file and use this supplement manual together with the service manual for Model No. SL-PS70, Order No. AD9001007C9.

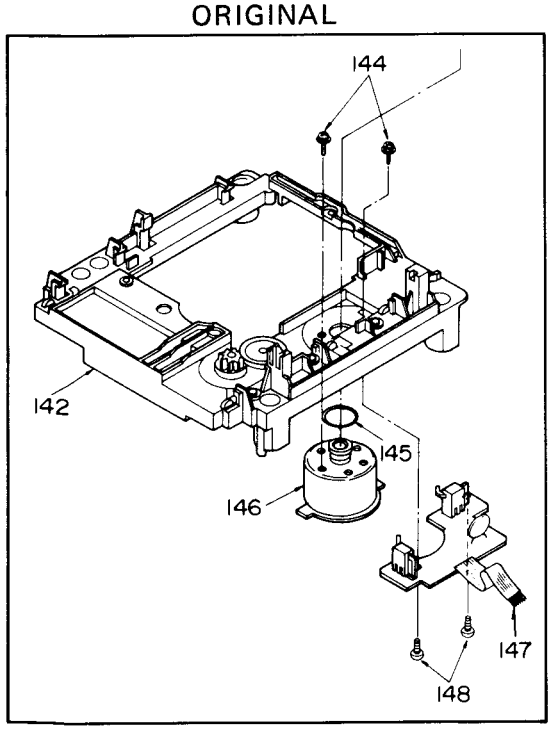
Note: • The purpose of this supplement is to correct an error in the "Traverse deck parts of Exploded Views".
Please correct your service manual as follows.

CORRECTION

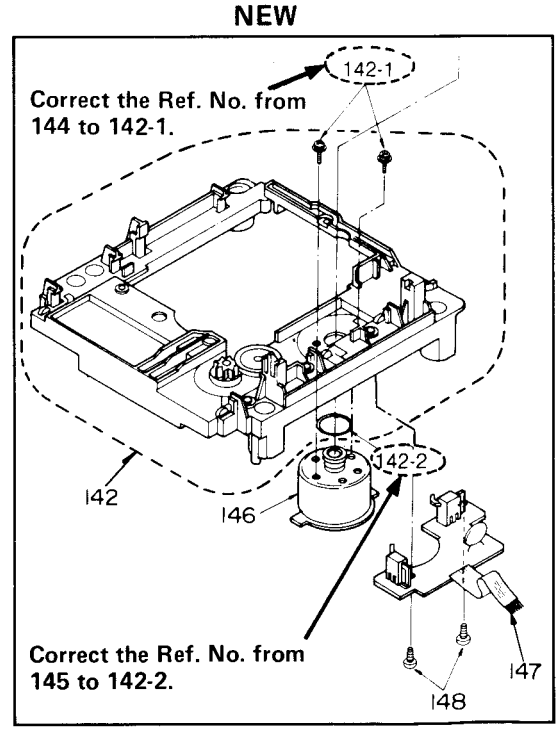
■ EXPLODED VIEWS (Page 48 of service manual.)

• Traverse deck parts

ORIGINAL



NEW



Technics

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Printed in Japan
K900708400TN

ORDER NO. AD9007222A2

Service Manual

COMPACT disc DIGITAL AUDIO

DIGITAL

Portable CD Player

SL-XP1A

Color

(K) . . . . Black Type

Area

Country Code	Area	Color
(E)	Continental Europe.	(K)
(EB)	Great Britain.	
(EG)	F.R. Germany & Italy.	

Please file and use this manual together with the service manual for Model No. SL-XP1, Order No. AD9004085A8.

CHANGES

■ REPLACEMENT PARTS LIST

Mentioned in this parts list are only those parts different from Model No. SL-XP1 for the destination (E, EB, EG) areas. All other parts are the same as for Model No. SL-XP1 for the destination (E, EB, EG) areas.

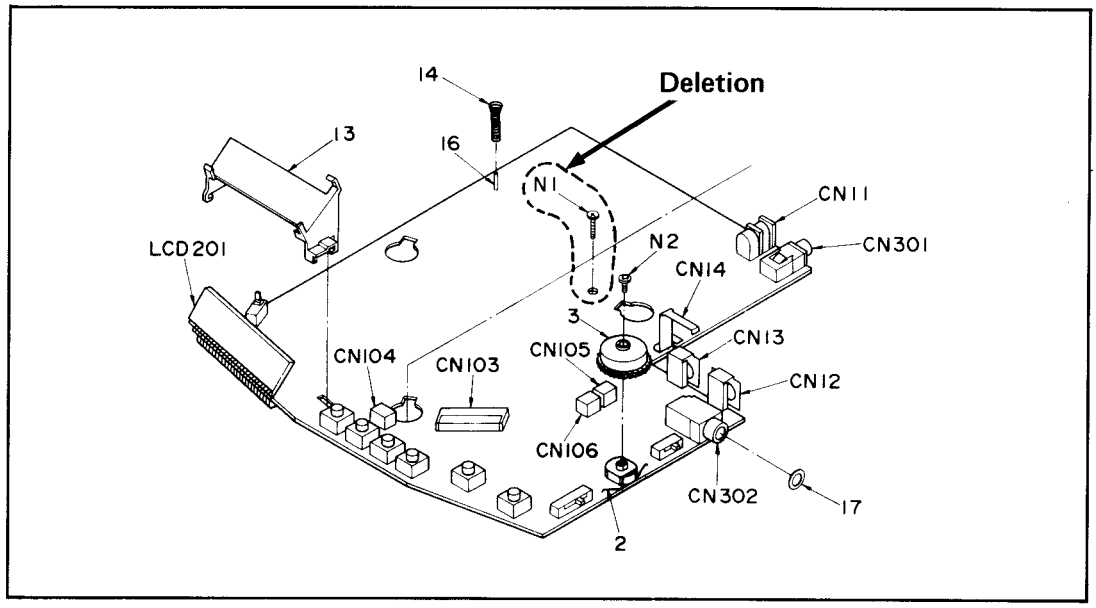
Ref. No.	Change of Part No. SL-XP1 (E, EB, EG) ➡ SL-XP1A (E, EB, EG)		Part Name & Description	Remarks
SCREW(S)				
N1	XTN17+4J	————	SCREW	Deletion
PACKING MATERIAL				
P1	RPQ0072	**RPQ0072**	PAD (ACCESSORIES)	(E, EG) Change
		————		(EB) Deletion
P2	RPQ0069	**RPQ0059**	SPACER	(E, EG) Change
		RPQ0069		(EB) Deletion
P3	RPQ0094	**RPQ0112**	ACCESSORIES BOX	Change
P5	RPH0035–1	————	MIRROR SHEET	Deletion
P6	RPH0036–1	————	POLYETHLENE SHEET	Deletion
P7	RPK0145	**RPK0196**	PACKING CASE	Change
P12	————	**SPPD1**	PROTECTION BAG (UNIT)	Addition

Technics

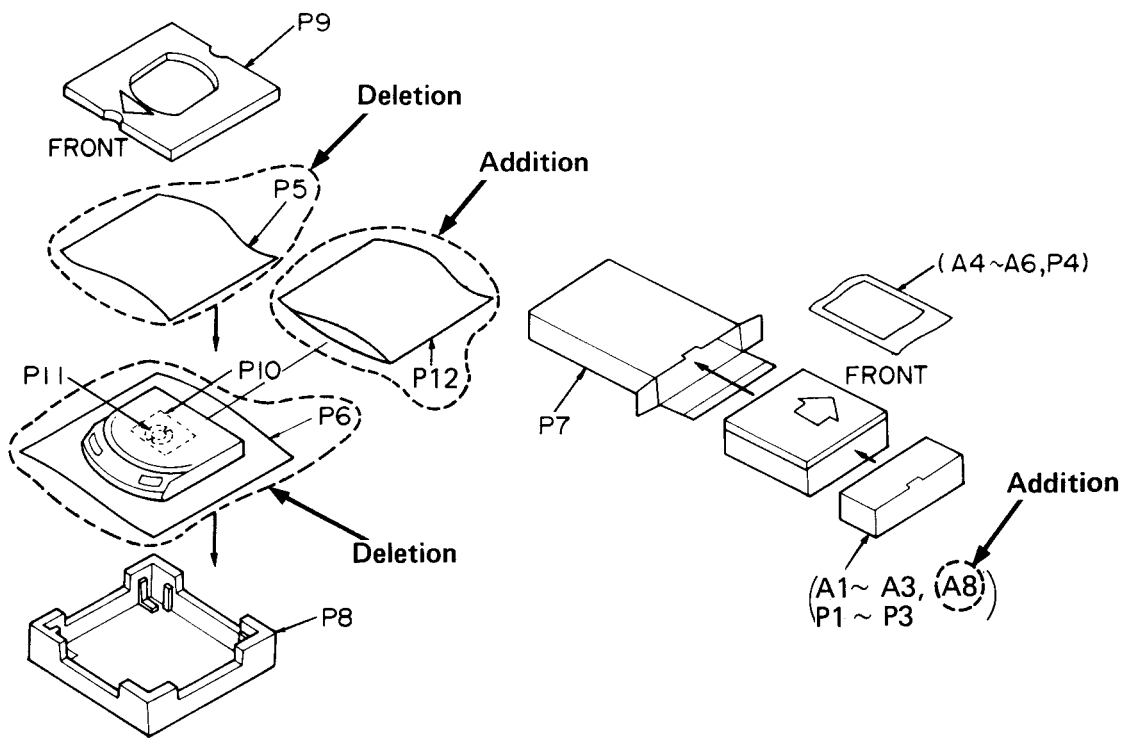
Matsushita Electric Industrial Co., Ltd.
Central P.O. Box 288, Osaka 530-91, Japan

Ref. No.	Change of Part No.		Part Name & Description	Remarks
	SL-XP1 (E, EB, EG)	➡ SL-XP1A (E, EB, EG)		
ACCESSORIES				
A5	RFKSLXP1E–K	**RFKSLXP1AE–K**	INSTRUCTION MANUAL ASS'Y	(E) Change
	RQT0444–B	**RQT0735–B**	INSTRUCTION MANUAL	(EB) Change
	RQT0445–D	**RQT0736–D**	INSTRUCTION MANUAL	(EG) Change
A8	————	**RP-HV135GY**	STEREO EARPHONES	Addition

■ EXPLODED VIEW (on page 34.)



■ PACKING (on page 38.)



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K900707900TN

ORDER NO. AD8911336S0
A6

Service Manual

Portable CD Player

SL-XP2

Supplement

COMPACT disc DIGITAL AUDIO

DIGITAL

Color

(K) . . . . Black Type.

Area

Country Code	Area	Color
(P)	U.S.A.	(K)
(PC)	Canada.	
(E)	Continental Europe.	
(EB)	Great Britain.	
(EG)	F.R. Germany.	
(EO)	Switzerland.	
(GC)	Third Region.	
(GN)	Oceania.	

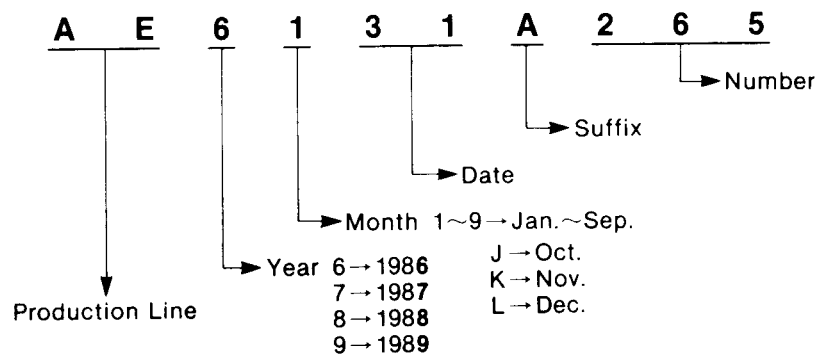
Please file and use this supplement manual together with the service manual for Model No. SL-XP2, Order No. AD8907240C1 or AD8907243C8. (Refer to the table below.)

Country Code	ORDER NO.
(P) (PC)	AD8907240C1
(E) (EB) (EG) (EO) (GC) (GN)	AD8907243C8

Notes:
The purpose of this supplement is to inform you of the following changes, and to correct an error in the schematic diagram. (see next page)

(1) The "I.C., D/A CONVERTER" (IC302) was changed to improve the distortion at low level. (Page 34 of service manual.)
(2) The "I.C., PROTECTOR" (ICP11) has been changed in units having serial number suffixes "B" and later. (Refer to "How to read the serial number" below). (Page 34 of service manual.)
(3) The rubber spacers (15-1, 15-2 of "CABINET AND CHASSIS") have been corrected in the "Replacement Parts List" on page 33 of service manual.

● How to read the serial number



(Continueu)

Technics

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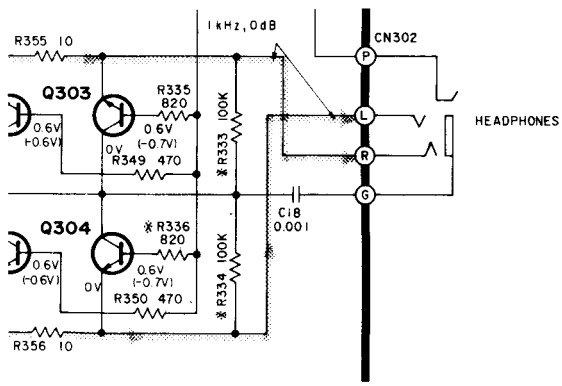
■ REPLACEMENT PARTS LIST

Ref. No.	Change of Part No. ORIGINAL → NEW		Part Name & Description	Remarks
INTEGRATED CIRCUITS				
IC302	UPD6372GSE1	**UPD6376GSE1**	I.C, D/A CONVERTER	Change
ICP11	SRUN38T	**SRUN50T**	I.C, PROTECTOR	Change
CABINET AND CHASSIS				
15–1	SHGD157	**SHGD165**	RUBBER SPACER	Correction
15–2	SHGD125	**SHGD157**	RUBBER SPACER	Correction

CORRECTION

■ SCHEMATIC DIAGRAM (HEADPHONE CIRCUIT)



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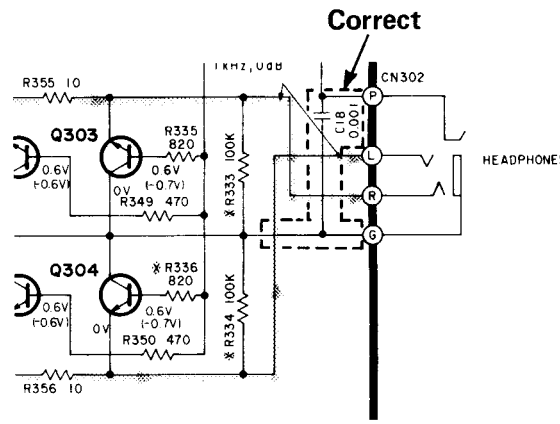
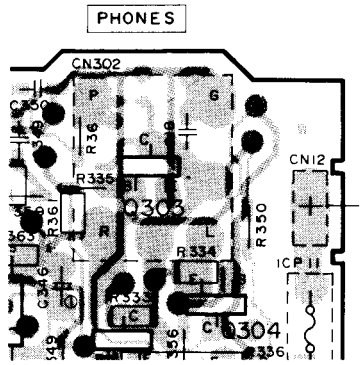
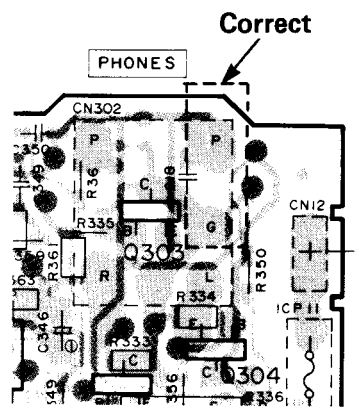


CORRECT

■ PRINTED CIRCUIT BOARDS (HEADPHONE P.C.B.)



INCORRECT



CORRECT

Printed in Japan
K891112000TN

ORDER NO. AD9007222A2

Service Manual

COMPACT disc DIGITAL AUDIO

DIGITAL

Portable CD Player

SL-XP1A

Color

(K) . . . . Black Type

Area

Country Code	Area	Color
(E)	Continental Europe.	(K)
(EB)	Great Britain.	
(EG)	F.R. Germany & Italy.	

Please file and use this manual together with the service manual for Model No. SL-XP1, Order No. AD9004085A8.

CHANGES

■ REPLACEMENT PARTS LIST

Mentioned in this parts list are only those parts different from Model No. SL-XP1 for the destination (E, EB, EG) areas. All other parts are the same as for Model No. SL-XP1 for the destination (E, EB, EG) areas.

Ref. No.	Change of Part No. SL-XP1 (E, EB, EG) ➡ SL-XP1A (E, EB, EG)		Part Name & Description	Remarks
SCREW(S)				
N1	XTN17+4J	————	SCREW	Deletion
PACKING MATERIAL				
P1	RPQ0072	**RPQ0072**	PAD (ACCESSORIES)	(E, EG) Change
		————		(EB) Deletion
P2	RPQ0069	**RPQ0059**	SPACER	(E, EG) Change
		RPQ0069		(EB) Deletion
P3	RPQ0094	**RPQ0112**	ACCESSORIES BOX	Change
P5	RPH0035–1	————	MIRROR SHEET	Deletion
P6	RPH0036–1	————	POLYETHLENE SHEET	Deletion
P7	RPK0145	**RPK0196**	PACKING CASE	Change
P12	————	**SPPD1**	PROTECTION BAG (UNIT)	Addition

Technics

Matsushita Electric Industrial Co., Ltd.
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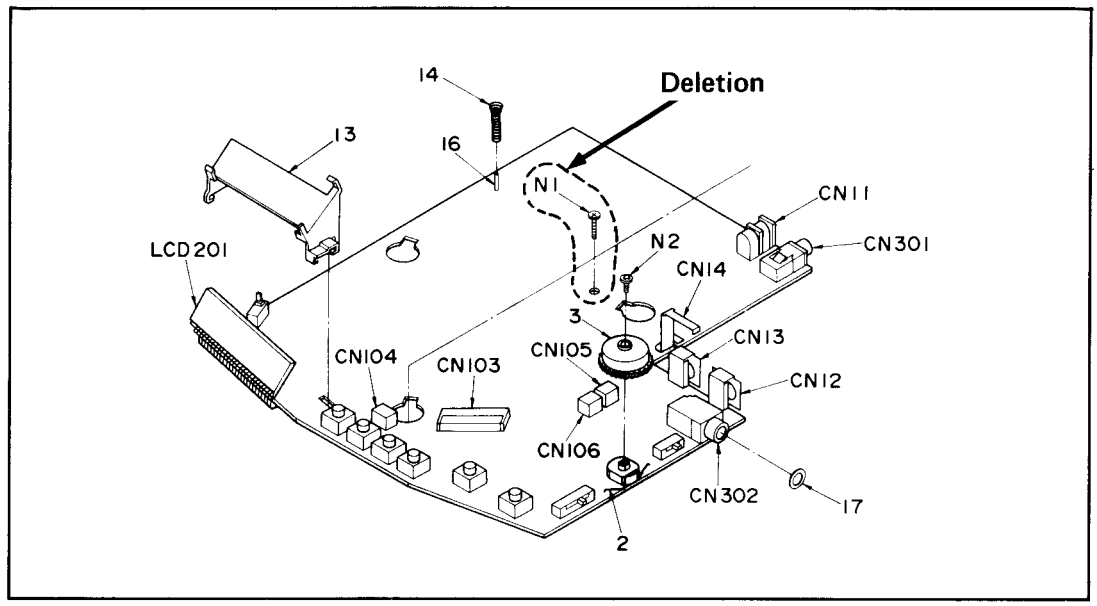
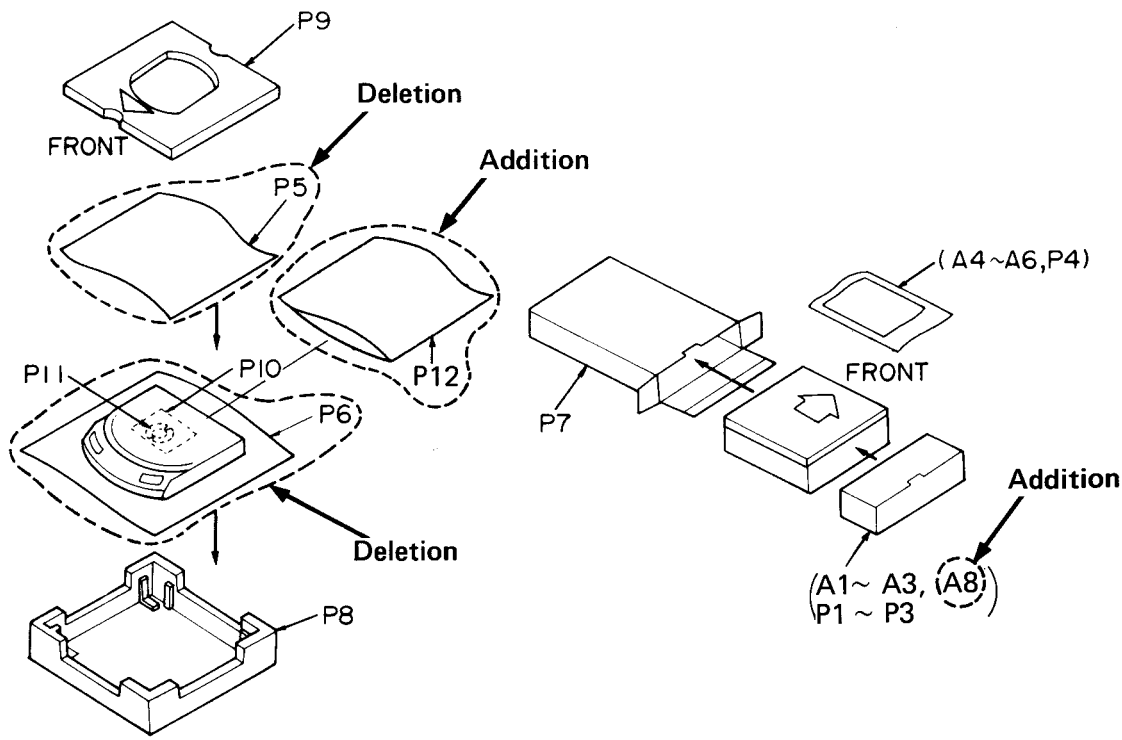
Ref. No.	Change of Part No.		Part Name & Description	Remarks
	SL-XP1 (E, EB, EG)	➡SL-XP1A (E, EB, EG)		
ACCESSORIES				
A5	RFKSLXP1E–K	**RFKSLXP1AE–K**	INSTRUCTION MANUAL ASS'Y	(E) Change
	RQT0444–B	**RQT0735–B**	INSTRUCTION MANUAL	(EB) Change
	RQT0445–D	**RQT0736–D**	INSTRUCTION MANUAL	(EG) Change
A8	————	**RP-HV135GY**	STEREO EARPHONES	Addition

■ EXPLODED VIEW (on page 34.)



■ PACKING (on page 38.)



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